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Supplementary Material: A Biophysically-Based Model of the Optical Properties of Skin Aging

Jose A. Iglesias-Guitian Carlos Aliaga Adrian Jarabo Diego Gutierrez

Universidad de Zaragoza

Contents

The supplementary material includes the formulas used to model the absorption of the chromophores used in our model (Table 1), the formulas to model the total absorption of each layer (Table 2), based on the absorption of each chromophore and their concentration, and the detailed description of how the sebum is modeled in our specular reflectance model (Section A). Finally, we include the database of simulated results for different types of skin, and different ages t, and degrees of skin care ξ, including with a sum-of-Gaussians fit [dL07] for each diffusion profile.

Appendix A: Modelling of sebum

We include the effect of skin surface sebum in the specular reflection, by assuming that the skin is composed of consecutive pyramidal holes whose edges' length and slope are defined by the microfacet properties derived for the surface roughness. Then we fill the holes with a certain volume of sebum. As humans age, sebaceous glands become less active. The thickness of the sebum film can vary between up to 3 μm in young skin to 1.69 μm in the elderly [PSD79]. Thus, the new value for α is computed as

$$\alpha' = \psi_s \alpha_{sr} \tag{1}$$

with $\psi_s = 1 - a_s/a_t$, a_t is the projected area of a facet of the pyramidal hole, and a_s is the portion of that area covered by sebum. Using trigonometry, we get:

$$\frac{a_s}{a_t} = \frac{l_s^2}{l^2} \tag{2}$$

with l the length of the skin profile scan, and

$$l_s = \sqrt[3]{\frac{3V_s}{2\tan\alpha_{sr}}} \tag{3}$$

where V_s is the volume of sebum computed for an specific age, based on the data of Pochi and colleages [PSD79].

Chromophore	Absorption coefficient
Eumelanin	$\mu_a^{em}(\lambda) = 6.6 \times 10^{10} \times \lambda^{-3.33}$
Pheomelanin	$\mu_a^{pm}(\lambda) = 2.9 \times 10^{14} \times \lambda^{-4.75}$
Oxy-Hb	$\mu_a^{HbO_2}(\lambda) = \frac{\epsilon_{HbO_2}(\lambda)}{66500(g/mole)}$
Deoxy-Hb	$\mu_a^{Hb}(\lambda) = \frac{\epsilon_{Hb}(\lambda)}{66500(g/mole)}$
Carotene	$\mu_a^{car}(\lambda) = \frac{\epsilon_{car}(\lambda)}{537(g/mole)}$
Bilirubin	$\mu_a^{bil}(\lambda) = \frac{\epsilon_{bil}(\lambda)}{585(g/mole)}$
Water	$\mu_a^{H_2O}(\lambda) = \epsilon_{H_2O}(\lambda)$
Baseline	$\mu_a^{base}(\lambda) = 7.84 \cdot 10^7 \cdot \lambda^{-3.255}$

Table 1: *The partial contribution of each chromophore to the final spectral absorption coefficient $\mu_a^l(\lambda)$ of a given layer, is obtained by multiplying the spectral extinction coefficient $\epsilon(\lambda)$ of the chromophore, generally measured in $(cm^{-1}M^{-1})$, by its concentration c_i in that layer. Chromophore absorptions are obtained from both measured data and previous empirical fits. For μ_a^{em} and μ_a^{pm}, we use empirical fits from [DJ06]. For $\mu_a^{HbO_2}$, μ_a^{Hb}, μ_a^{car} and μ_a^{bil} we use equations from the BioSpec model [KB04]. Last, we employ measured values for $\mu_a^{H_2O}$ taken from [PF97] and baseline absorption for depigmented skin from Saidi [Sai92].*

References

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Skin layer absorption coefficient	Reformulated absorption equation
$\boldsymbol{\mu_a^{sc}(\lambda)}$	$[(0.1 - 0.3 \times 10^{-4}\lambda) + 0.125\frac{\lambda}{10} \times \mu_a^{base}(\lambda)] \times (1 - f_{H_2O}) + \mu_a^{H_2O}(\lambda)$
$\boldsymbol{\mu_a^{le}(\lambda)}$	$[v_m \times (\mu_a^{eu}(\lambda) + \mu_a^{ph}(\lambda)) + (1 - v_m) \times (\mu_a^{car}(\lambda) + (1 - c_{car}) \times \mu_a^{base}(\lambda))] \times (1 - f_{H_2O}) + \mu_a^{H_2O}(\lambda)$
$\boldsymbol{\mu_a^{pd}(\lambda)}$	$[v_{Hb}^{pd} \times (\mu_a^{oxy-Hb}(\lambda) + \mu_a^{deoxy-Hb}(\lambda) + \mu_a^{bil}(\lambda) + \mu_a^{car}(\lambda)) + (1 - v_{Hb}) \times \mu_a^{base}(\lambda)] \times (1 - f_{H_2O}) + \mu_a^{H_2O}(\lambda)$
$\boldsymbol{\mu_a^{rd}(\lambda)}$	$[v_{Hb}^{rd} \times (\mu_a^{oxy-Hb}(\lambda) + \mu_a^{deoxy-Hb}(\lambda) + \mu_a^{bil}(\lambda) + \mu_a^{car}(\lambda)) + (1 - v_{Hb}) \times \mu_a^{base}(\lambda)] \times (1 - f_{H_2O}) + \mu_a^{H_2O}(\lambda)$
$\boldsymbol{\mu_a^{hd}(\lambda)}$	$\mu_a^{H_2O}(\lambda)$

Table 2: *Wavelength-dependent absorption equations for each layer of our skin model. All equations fit data absorption in* mm^{-1}. *Different volume fractions* v_p *and* v_r *of blood present in tissue are estimated for the papillary and reticular dermis respectively (adapted from [MM02, KB04].*

[PF97] POPE R. M., FRY E. S.: Absorption spectrum (380–700 nm) of pure water. ii. integrating cavity measurements. *Applied optics 36*, 33 (1997). 1

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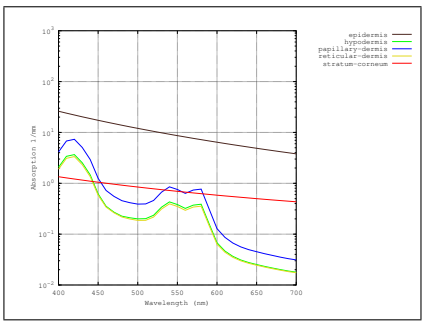
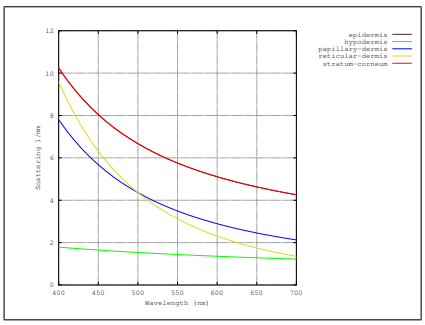
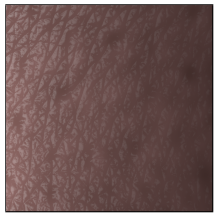
Female Age 30 ξ =0 v_m 10 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	0	10	5	0.05	2.1e-4	0.081579







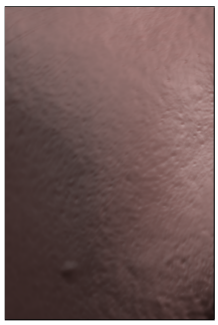
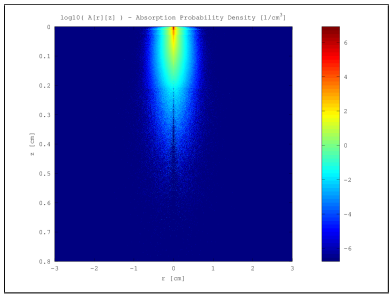
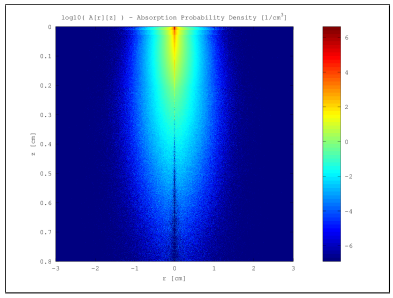
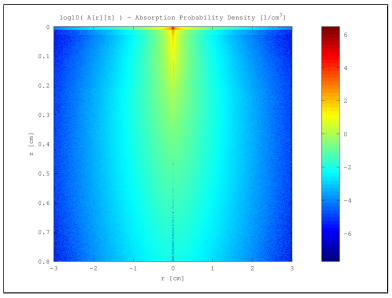


Figure 1: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

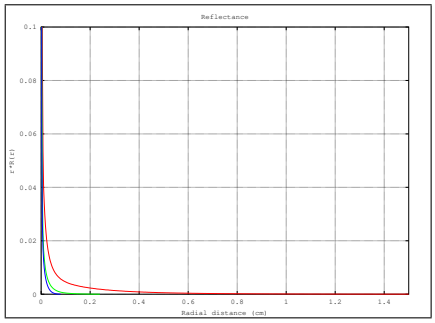


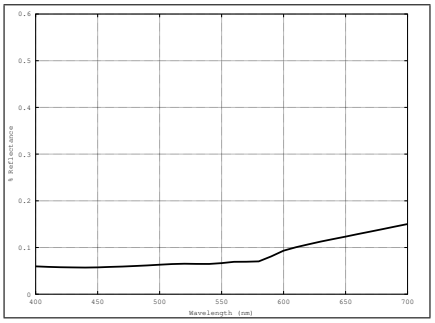




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	173.3	80.404	86.581	57.559	60.683	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 2: Top row: MonteCarlo simulations for 450nm, 550nm and 610nm. Bottom row: Resultant optical parameters (d, μ_a, μ_s') applying our skin aging model.



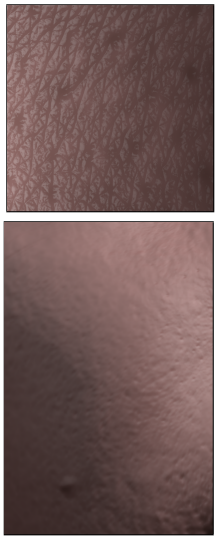


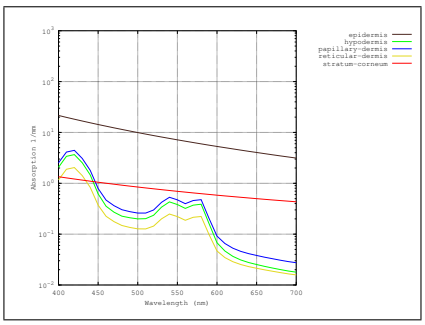
Fitting	R	G	B
w_i	(664.116, 46.467, 4.154, 0.714, 0.091, 0.012)	(319.824, 212.952, 26.166, 1.742, 0.190, -7.845)	(352.099, 242.769, 28.853, 4.028, 1.011, 0.205)
v_i	(0.500, 2.537, 17.788, 110.758, 900.240, 8447.149)	(0.267, 0.581, 2.690, 19.809, 156.189, 2.636)	(0.295, 0.414, 1.309, 4.950, 18.779, 69.196)
RMS,AMAX	2.03e-13, 1e-04f	1.23e-10, 2e-03f	3.37e-10, 3e-03f

Figure 3: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =0 v_m 10 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	0	10	5	0.05	2.1e-4	0.12802





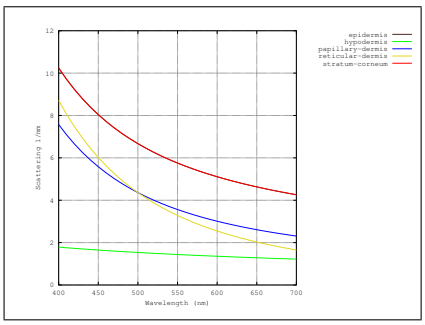
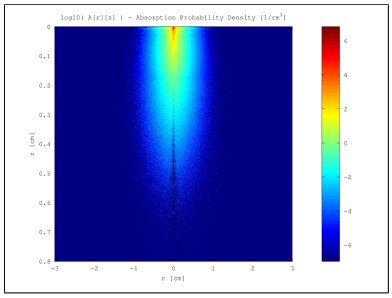
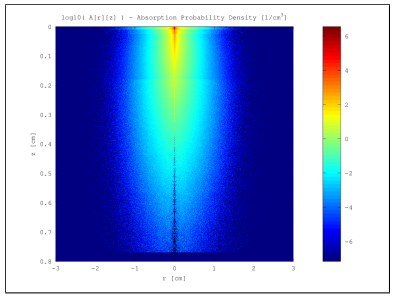
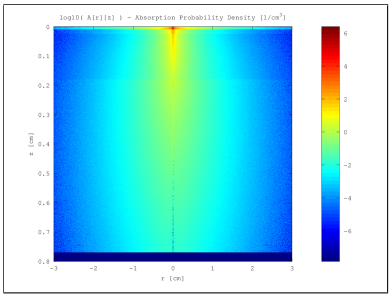


Figure 4: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

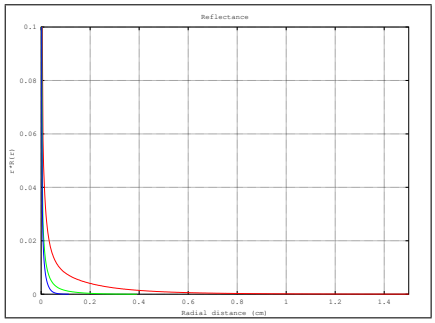


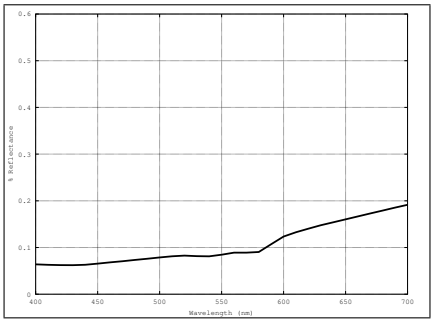




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	143.24	80.404	71.561	57.559	50.158	50.025
Papillary-dermis	0.015295	7.8938	55.809	4.723	35.614	0.65427	29.197
Reticular-dermis	0.15465	3.7192	60.173	2.2155	32.821	0.34621	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 5: Top row: MonteCarlo simulations for 450nm, 550nm and 610nm. Bottom row: Resultant optical parameters (d, μ_a, μ_s') applying our skin aging model.



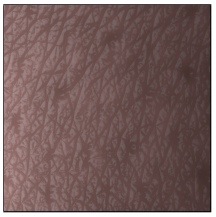


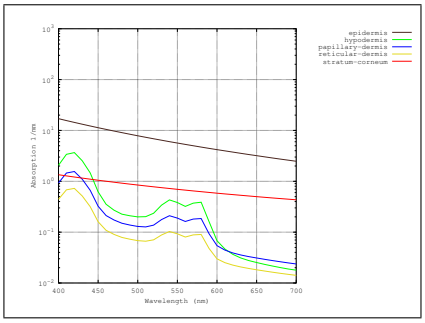
Fitting	R	G	B
w_i	(670.886, 53.509, 5.047, 0.906, 0.139, 0.019)	(408.487, 35.095, 3.352, 0.778, 0.150, 0.018)	(2.203, 2.175, 2.170, 2.169, 2.168, -0.063)
v_i	(0.492, 2.306, 17.780, 120.470, 998.124, 8405.643)	(0.436, 1.790, 9.785, 43.955, 211.079, 1372.135)	(1.271, 1.216, 1.193, 1.306, 1.257, 0.538)
RMS,AMAX	2.71e-12, 5e-04f	1.32e-09, 6e-03f	9.15e-01, 2e+02f

Figure 6: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =0 v_m 10 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	0	10	5	0.05	2.1e-4	0.18059





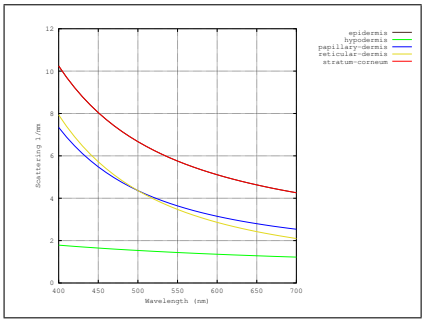
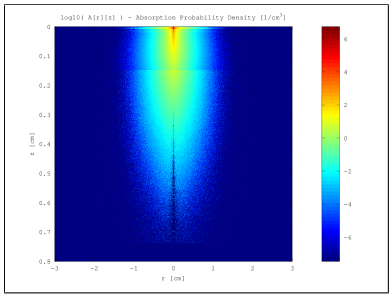
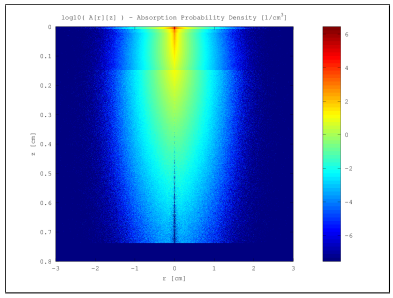
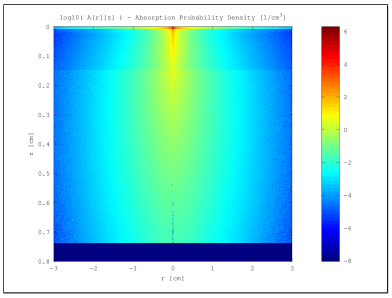


Figure 7: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

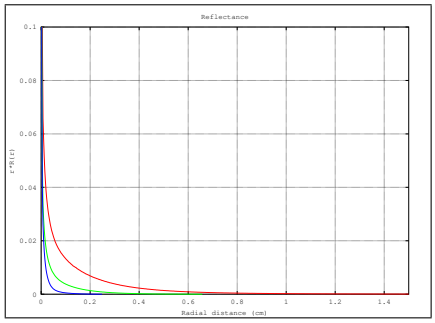


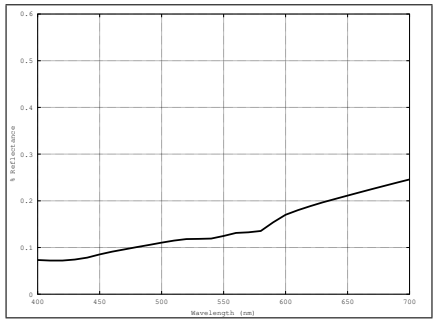




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	113.19	80.404	56.542	57.559	39.633	50.025
Papillary-dermis	0.012592	3.2353	54.81	1.8888	36.388	0.44328	30.688
Reticular-dermis	0.12732	1.6022	57.191	0.92727	34.723	0.25118	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 8: Top row: MonteCarlo simulations for 450nm, 550nm and 610nm. Bottom row: Resultant optical parameters (d, μ_a, μ_s') applying our skin aging model.



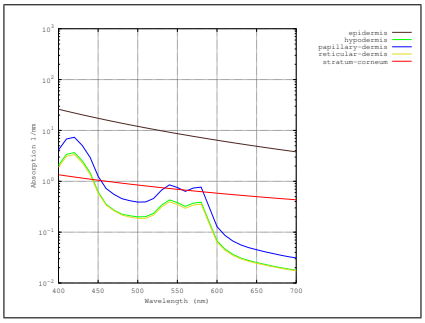


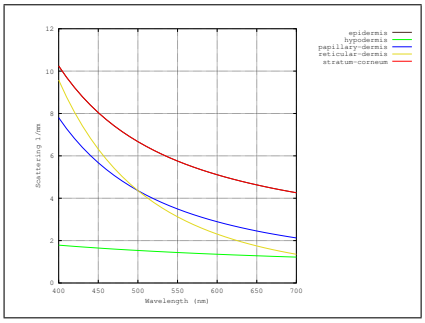
Fitting	R	G	B
w_i	(647.316, 40.143, 5.478, 1.075, 0.208, 0.030)	(380.106, 25.175, 3.440, 0.763, 0.146, 0.023)	(575.652, 59.831, 8.198, 2.286, 0.437, 0.032)
v_i	(0.538, 2.577, 19.733, 142.153, 1129.543, 8472.167)	(0.500, 2.147, 13.185, 72.150, 433.962, 2781.341)	(0.332, 1.032, 3.575, 14.496, 66.848, 479.082)
RMS,AMAX	9.13e-12, 9e-04f	4.47e-12, 3e-04f	1.67e-08, 2e-02f

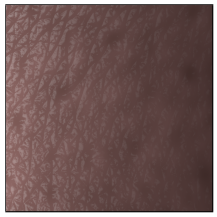
Figure 9: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =1 v_m 10 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	1	10	5	0.05	2.1e-4	0.069549







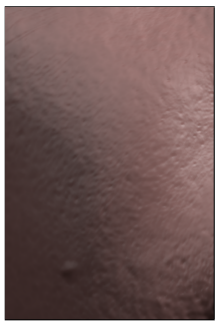
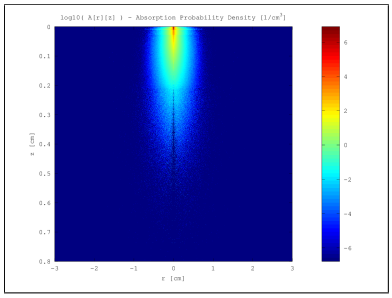
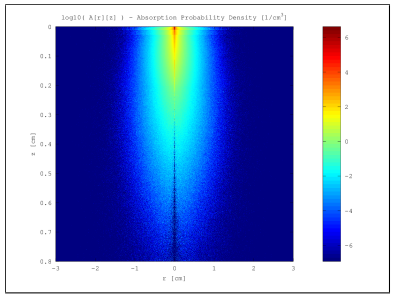
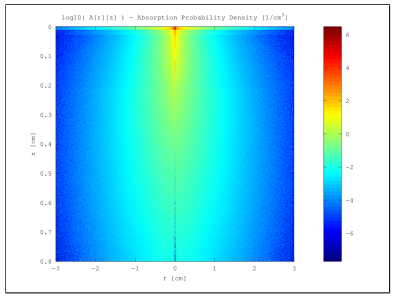


Figure 10: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

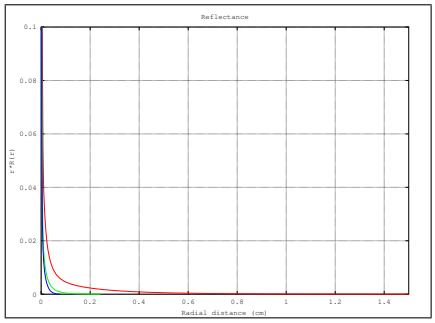


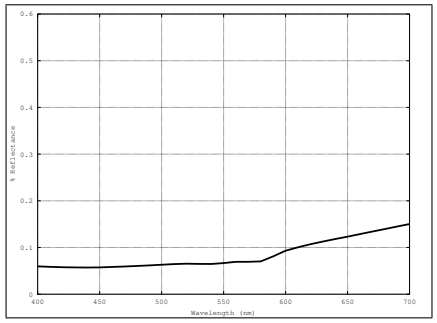




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	173.3	80.404	86.581	57.559	60.683	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 11: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ_s') applying our skin aging model.



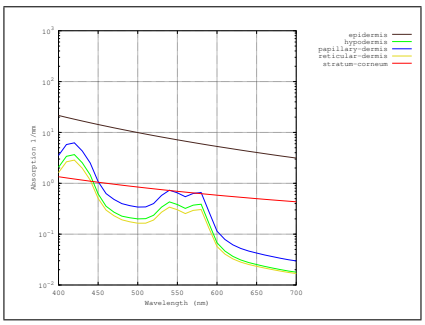


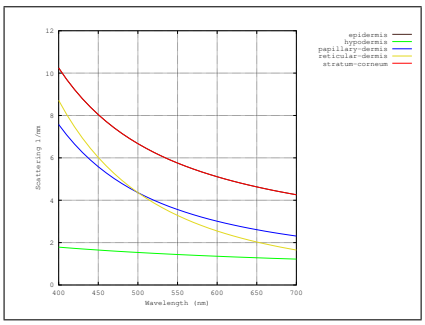
Fitting	R	G	B
w_i	(667.196, 48.133, 4.220, 0.725, 0.093, 0.012)	(218.600, 212.586, 35.751, 1.707, 0.187, -17.680)	(422.316, 205.908, 28.145, 3.917, 1.002, 0.204)
v_i	(0.495, 2.487, 17.498, 109.109, 884.029, 8363.333)	(0.343, 0.572, 2.703, 20.168, 157.685, 2.658)	(0.285, 0.431, 1.336, 5.014, 18.911, 69.250)
RMS,AMAX	2.08e-13, 1e-04f	1.65e-09, 6e-03f	4.93e-10, 4e-03f

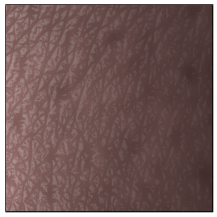
Figure 12: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =1 v_m 10 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	1	10	5	0.05	2.1e-4	0.099683







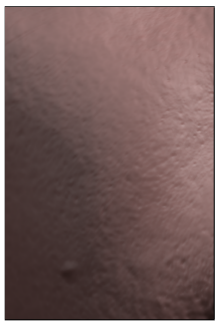
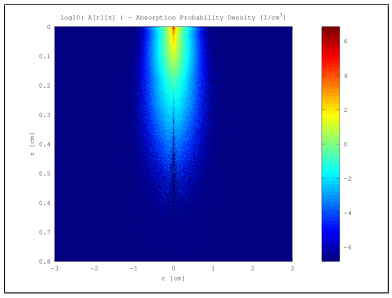
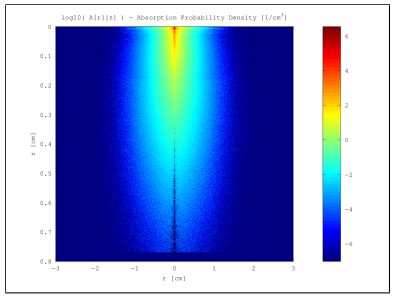
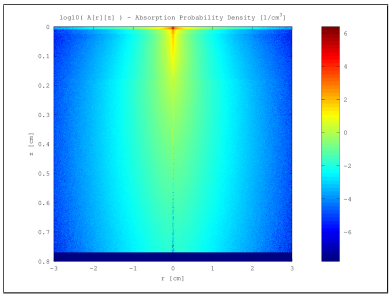


Figure 13: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

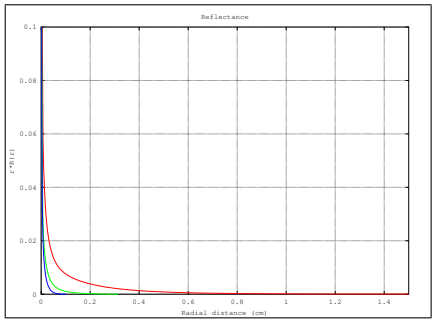


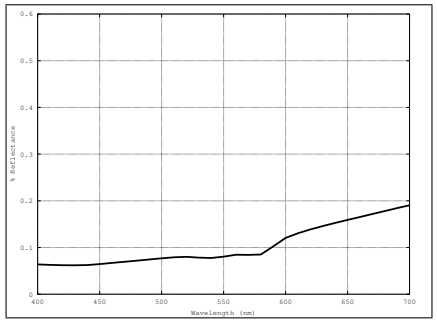




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	143.24	80.404	71.561	57.559	50.158	50.025
Papillary-dermis	0.015295	10.805	55.809	6.4944	35.614	0.78613	29.197
Reticular-dermis	0.15465	5.0424	60.173	3.0206	32.821	0.40559	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 14: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



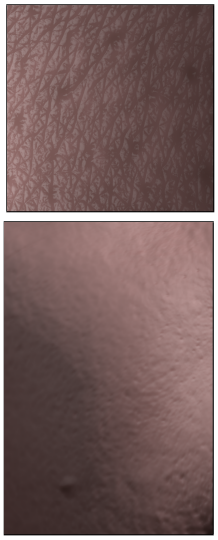


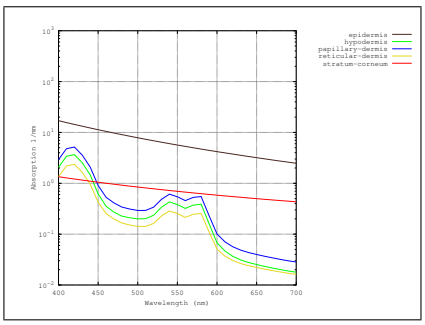
Fitting	R	G	B
w_i	(672.321, 54.642, 5.128, 0.921, 0.140, 0.019)	(444.419, 45.453, 9.447, 2.302, 0.423, 0.040)	(2.207, 2.175, 2.170, 2.169, 2.165, -0.062)
v_i	(0.490, 2.273, 17.367, 116.808, 960.373, 8158.612)	(0.380, 1.268, 3.208, 16.079, 91.135, 681.992)	(1.270, 1.215, 1.193, 1.305, 1.256, 0.537)
RMS,AMAX	2.29e-12, 4e-04f	9.41e-10, 5e-03f	9.15e-01, 2e+02f

Figure 15: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =1 v_m 10 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	1	10	5	0.05	2.1e-4	0.14797





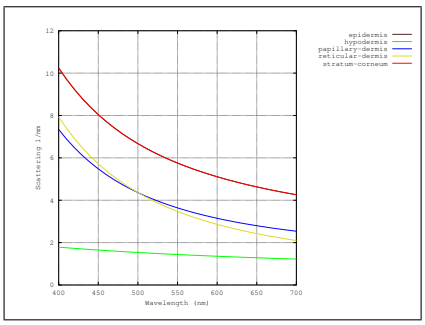
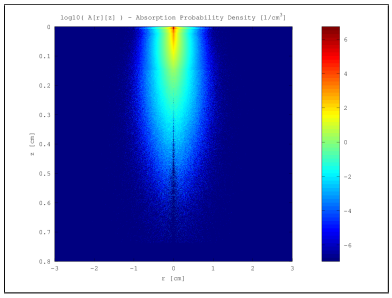
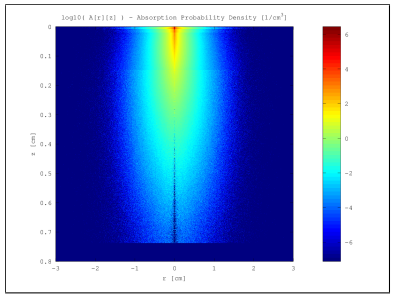
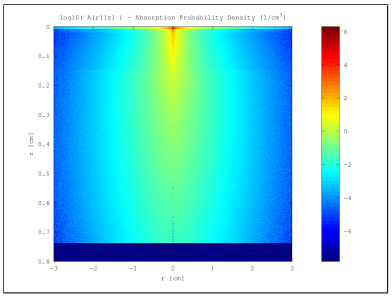


Figure 16: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

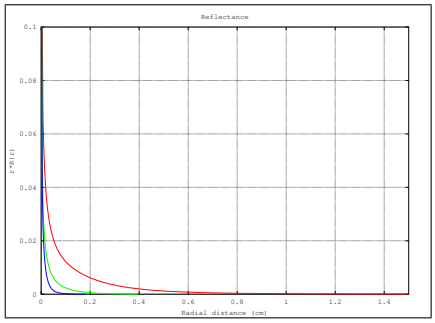


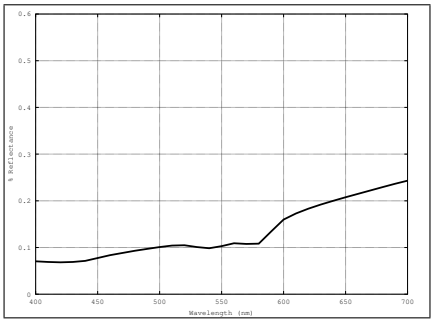




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	113.19	80.404	56.542	57.559	39.633	50.025
Papillary-dermis	0.012592	9.0584	54.81	5.4315	36.388	0.70701	30.688
Reticular-dermis	0.12732	4.2485	57.191	2.5375	34.723	0.36996	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 17: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



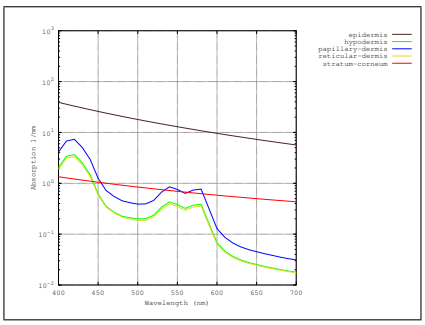


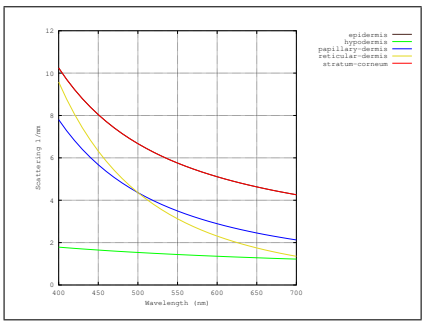
Fitting	R	G	B
w_i	(2077.740, 125.577, 7.550, 1.424, 0.253, 0.036)	(137.296, 95.203, 84.042, 51.686, 3.942, 0.325)	(478.496, 136.175, 16.869, 3.266, 0.680, 0.055)
v_i	(0.212, 1.460, 13.665, 101.680, 843.909, 6916.234)	(0.432, 0.735, 0.931, 0.391, 14.094, 0.057)	(0.309, 0.642, 2.236, 9.837, 42.952, 233.925)
RMS,AMAX	1.29e-08, 3e-02f	1.06e-03, 5e+00f	3.66e-09, 1e-02f

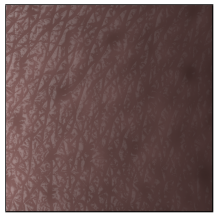
Figure 18: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =0 v_m 15 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	0	15	5	0.05	2.1e-4	0.081579







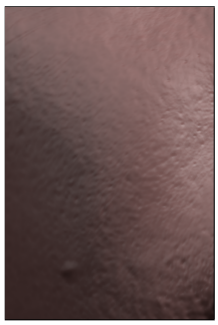
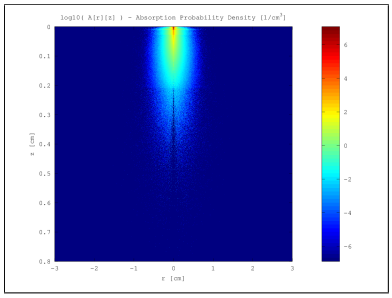
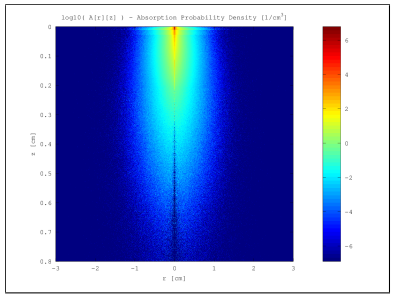
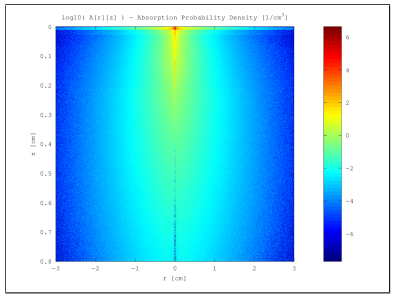


Figure 19: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

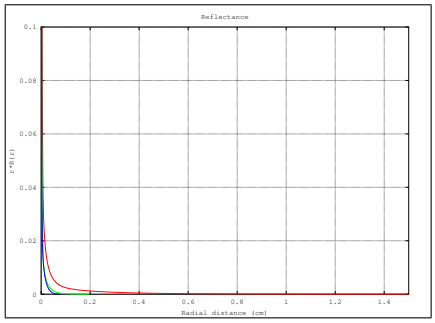


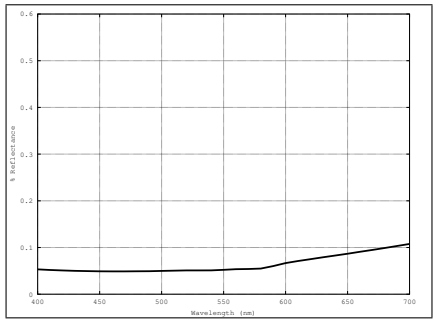




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	259.18	80.404	129.49	57.559	90.755	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 20: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ_s') applying our skin aging model.



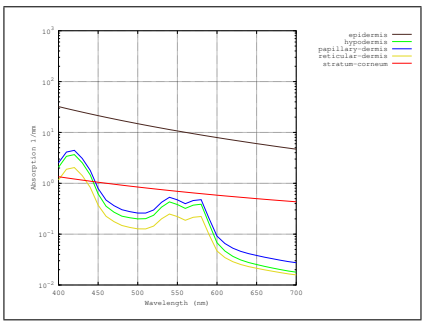


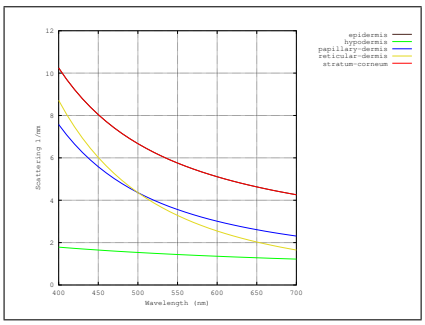
Fitting	R	G	B
w_i	(667.106, 36.646, 3.130, 0.547, 0.061, 0.007)	(349.940, 124.105, 14.625, 1.603, 0.354, 0.044)	(304.844, 269.051, 90.778, 6.451, 1.342, 0.282)
v_i	(0.486, 2.442, 15.952, 96.113, 731.241, 7683.410)	(0.335, 0.599, 2.230, 10.991, 52.405, 246.059)	(0.266, 0.317, 0.607, 2.809, 13.175, 57.667)
RMS,AMAX	4.48e-14, 6e-05f	1.71e-10, 2e-03f	2.91e-09, 8e-03f

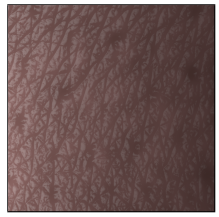
Figure 21: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =0 v_m 15 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	0	15	5	0.05	2.1e-4	0.12802







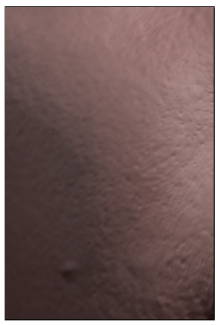
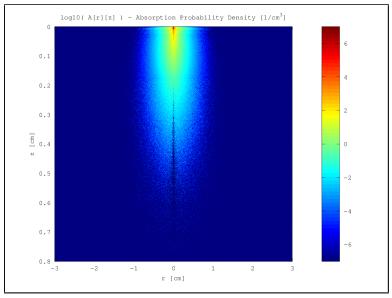
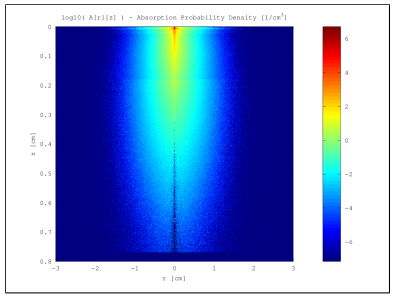
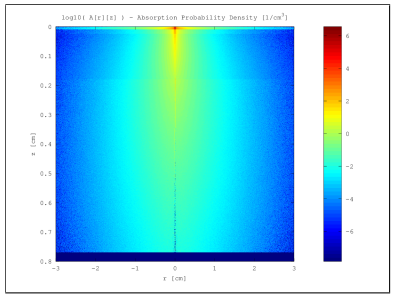


Figure 22: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

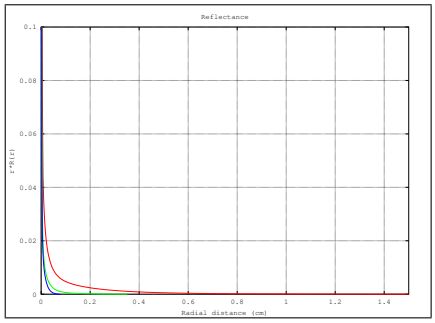


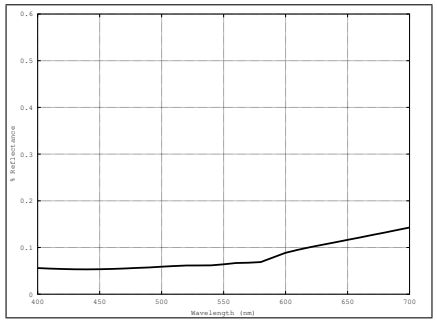




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	214.09	80.404	106.96	57.559	74.968	50.025
Papillary-dermis	0.015295	7.8938	55.809	4.723	35.614	0.65427	29.197
Reticular-dermis	0.15465	3.7192	60.173	2.2155	32.821	0.34621	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 23: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



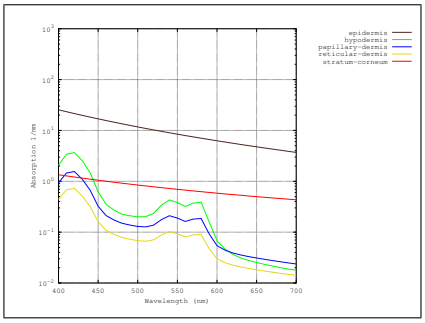


Fitting	R	G	B
w_i	(676.077, 45.931, 4.137, 0.723, 0.098, 0.013)	(2.159, 2.130, 2.129, 2.118, 2.113, -0.012)	(380.403, 258.112, 49.122, 6.195, 1.299, 0.259)
v_i	(0.477, 2.187, 15.807, 104.123, 852.442, 7719.352)	(1.292, 1.192, 1.225, 1.283, 1.336, 0.392)	(0.271, 0.347, 0.837, 3.246, 14.760, 62.008)
RMS,AMAX	2.54e-12, 4e-04f	9.07e-01, 1e+02f	7.14e-09, 1e-02f

Figure 24: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =0 v_m 15 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	0	15	5	0.05	2.1e-4	0.18059



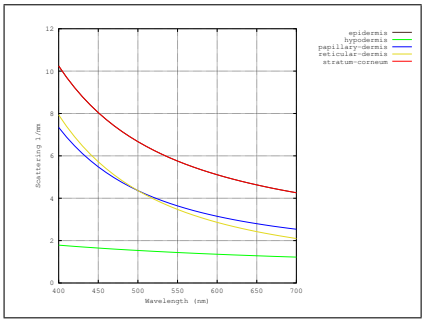
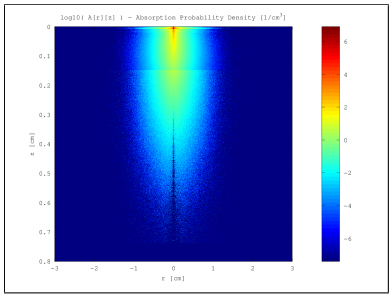
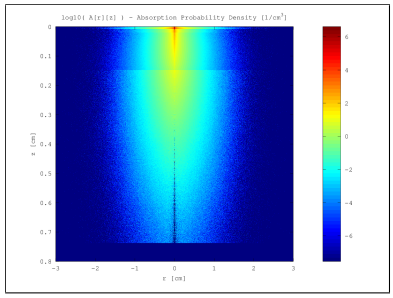
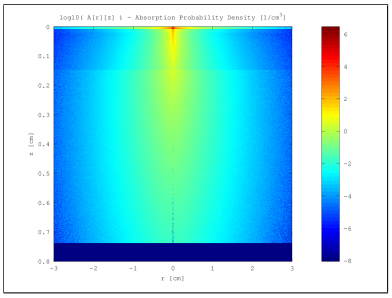


Figure 25: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

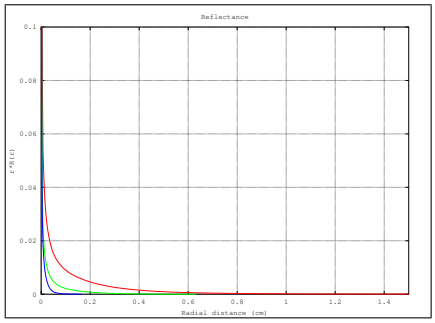


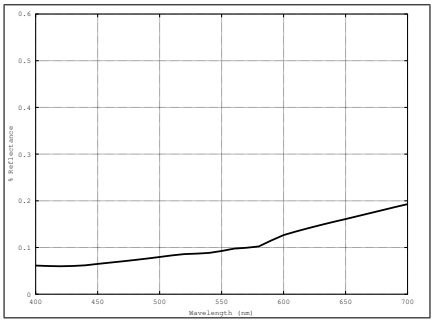




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	169.01	80.404	84.435	57.559	59.18	50.025
Papillary-dermis	0.012592	3.2353	54.81	1.8888	36.388	0.44328	30.688
Reticular-dermis	0.12732	1.6022	57.191	0.92727	34.723	0.25118	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 26: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ_s') applying our skin aging model.



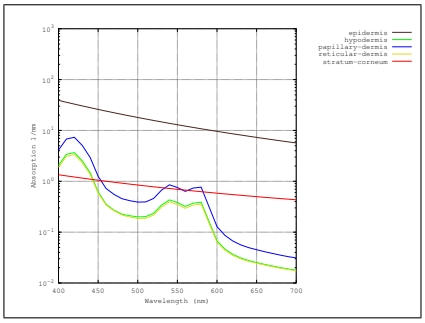


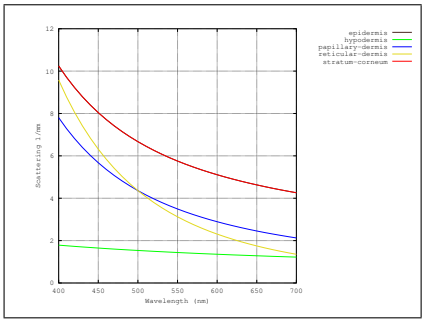
Fitting	R	G	B
w_i	(1.791, 1.746, 1.738, -0.016, -0.086, -0.115)	(2.014, 1.927, 1.905, 0.052, 0.009, -0.003)	(447.825, 193.915, 20.617, 3.269, 0.724, 0.068)
v_i	(1.278, 1.422, 1.182, 0.513, 0.760, 0.723)	(1.097, 1.224, 1.218, 0.541, 0.873, 0.623)	(0.278, 0.486, 1.596, 7.237, 33.170, 163.328)
RMS,AMAX	9.76e-01, 3e+02f	9.51e-01, 2e+02f	7.63e-09, 1e-02f

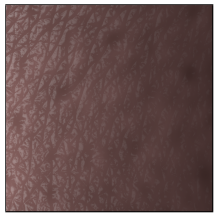
Figure 27: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =1 v_m 15 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	1	15	5	0.05	2.1e-4	0.069549







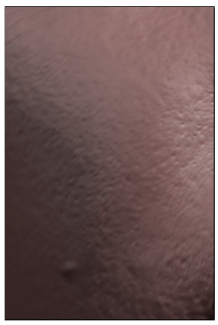
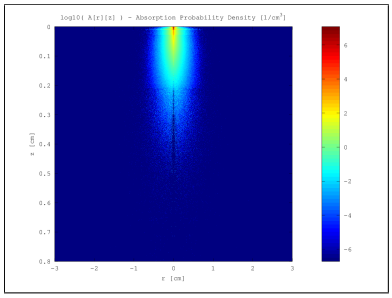
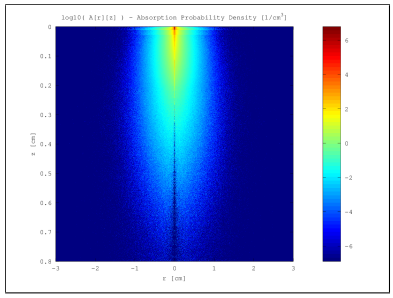
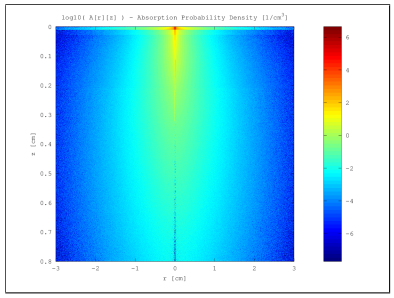


Figure 28: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

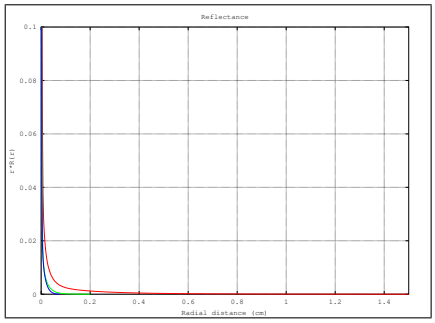


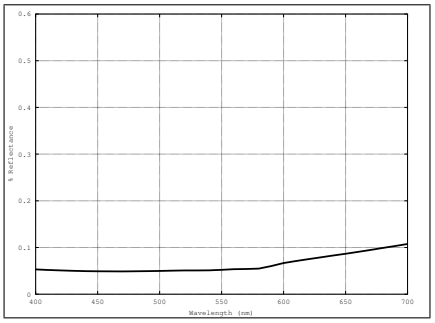




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	259.18	80.404	129.49	57.559	90.755	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 29: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



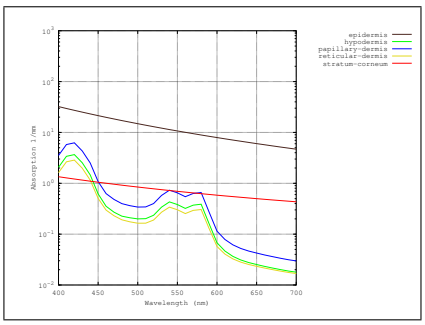


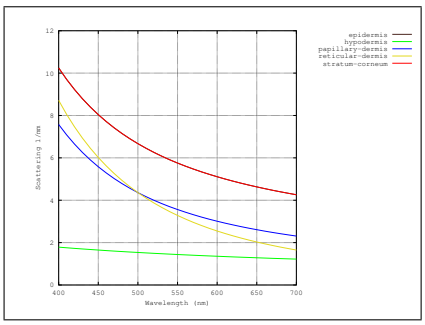
Fitting	R	G	B
w_i	(673.470, 38.581, 3.279, 0.599, 0.074, 0.008)	(375.005, 140.397, 14.250, 1.566, 0.341, 0.041)	(296.158, 280.654, 103.185, 6.807, 1.339, 0.277)
v_i	(0.479, 2.355, 14.873, 85.484, 602.253, 6675.745)	(0.303, 0.596, 2.264, 11.343, 54.232, 253.184)	(0.269, 0.296, 0.587, 2.737, 13.329, 57.976)
RMS,AMAX	8.90e-11, 3e-03f	1.52e-10, 2e-03f	5.91e-09, 1e-02f

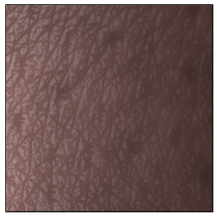
Figure 30: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =1 v_m 15 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	1	15	5	0.05	2.1e-4	0.099683







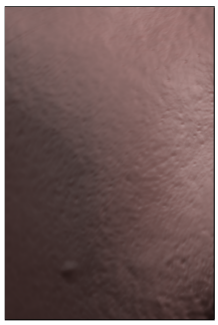
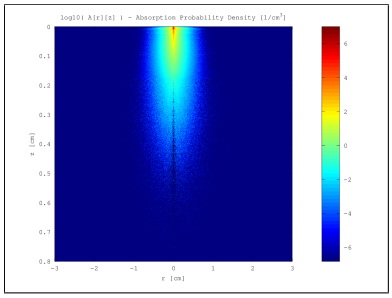
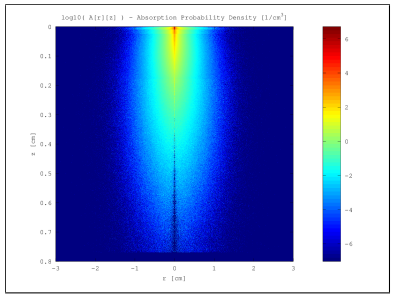
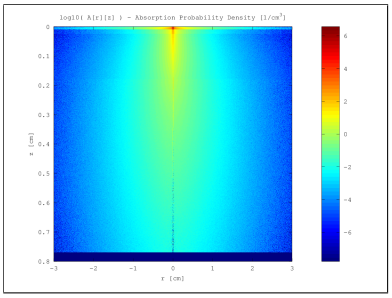


Figure 31: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

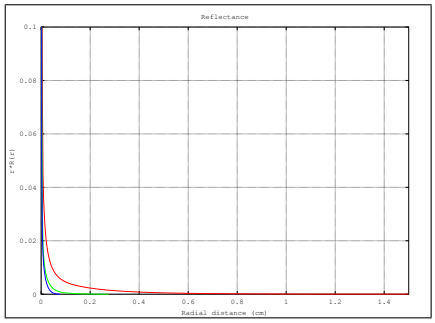


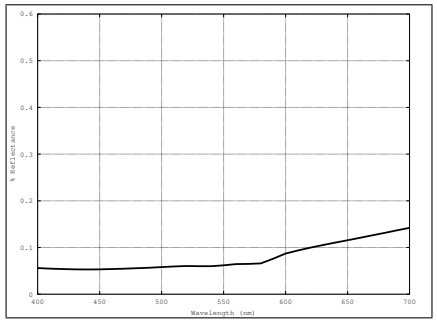




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	214.09	80.404	106.96	57.559	74.968	50.025
Papillary-dermis	0.015295	10.805	55.809	6.4944	35.614	0.78613	29.197
Reticular-dermis	0.15465	5.0424	60.173	3.0206	32.821	0.40559	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 32: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ_s') applying our skin aging model.



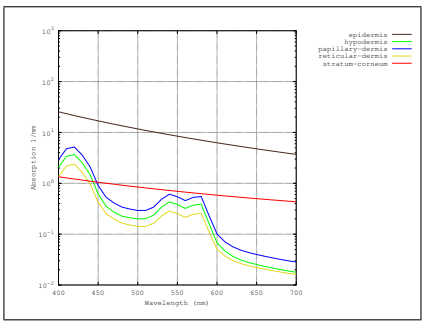


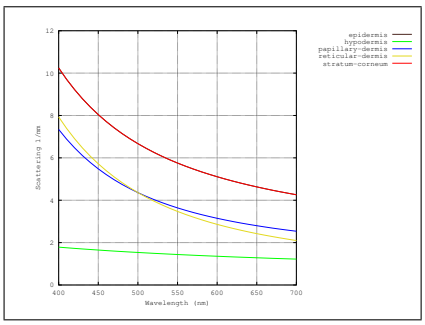
Fitting	R	G	B
w_i	(674.709, 45.311, 4.129, 0.725, 0.099, 0.013)	(2.157, 2.129, 2.127, 2.117, 2.111, -0.012)	(338.828, 289.904, 59.207, 7.113, 1.429, 0.279)
v_i	(0.479, 2.201, 15.711, 102.276, 823.134, 7494.209)	(1.291, 1.194, 1.226, 1.282, 1.334, 0.392)	(0.260, 0.342, 0.753, 2.944, 13.622, 59.832)
RMS,AMAX	1.69e-12, 4e-04f	9.07e-01, 1e+02f	7.67e-09, 1e-02f

Figure 33: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =1 v_m 15 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	1	15	5	0.05	2.1e-4	0.14797





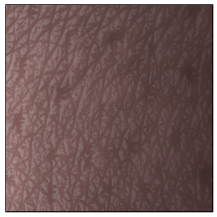
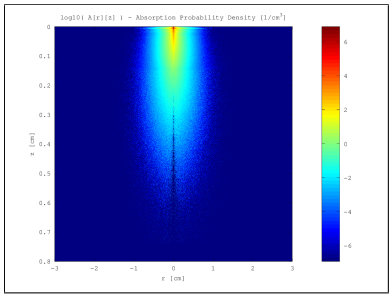
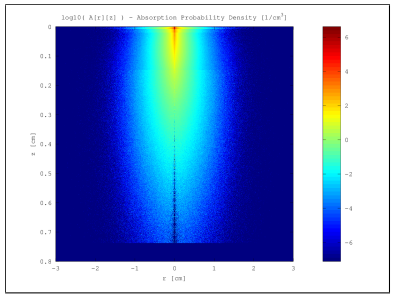
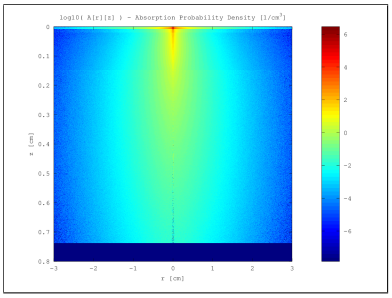


Figure 34: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

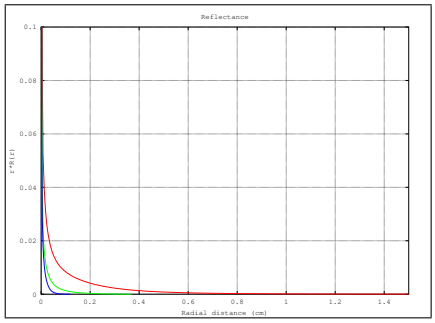


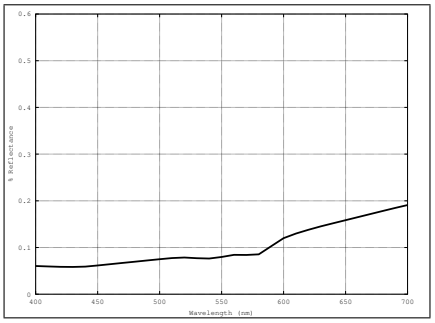




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	169.01	80.404	84.435	57.559	59.18	50.025
Papillary-dermis	0.012592	9.0584	54.81	5.4315	36.388	0.70701	30.688
Reticular-dermis	0.12732	4.2485	57.191	2.5375	34.723	0.36996	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 35: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



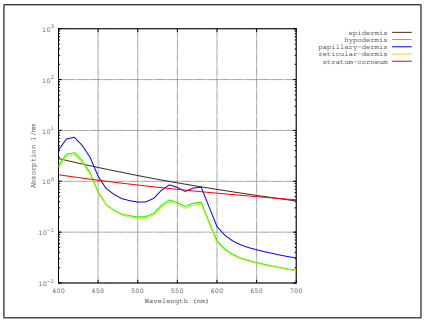


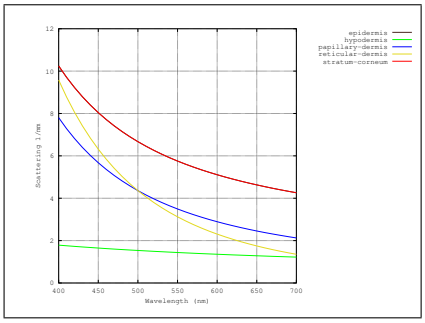
Fitting	R	G	B
w_i	(1.794, 1.744, 1.739, -0.031, -0.091, -0.098)	(2.008, 1.928, 1.909, 0.049, 0.008, -0.002)	(372.093, 299.433, 39.460, 4.256, 1.029, 0.162)
v_i	(1.280, 1.420, 1.182, 0.586, 0.705, 0.774)	(1.101, 1.221, 1.217, 0.555, 0.873, 0.572)	(0.263, 0.364, 1.172, 5.255, 21.853, 91.549)
RMS,AMAX	9.76e-01, 3e+02f	9.51e-01, 2e+02f	3.33e-09, 9e-03f

Figure 36: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =0 v_m 1 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	0	1	5	0.05	2.1e-4	0.081579





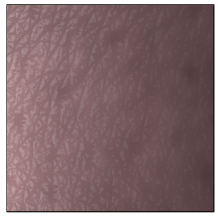
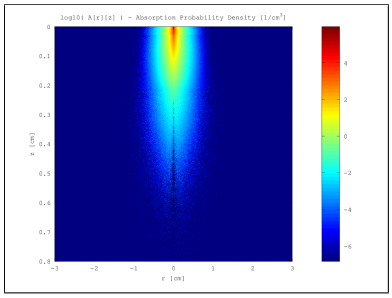
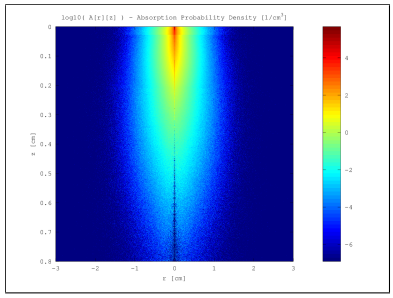
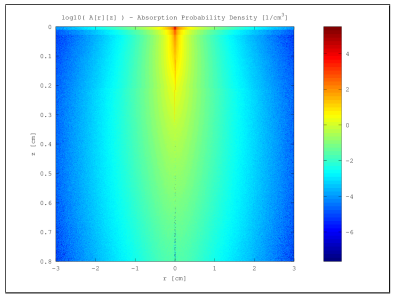


Figure 37: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

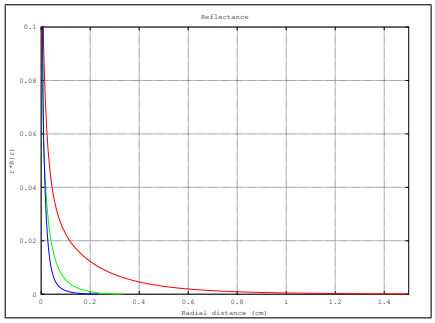


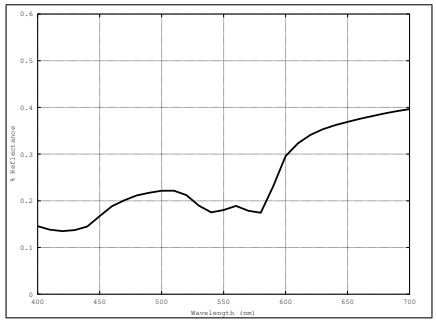




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	18.724	80.404	9.3377	57.559	6.5544	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 38: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



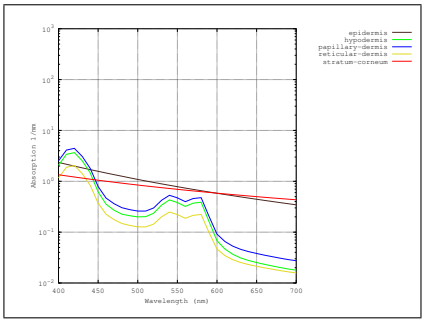


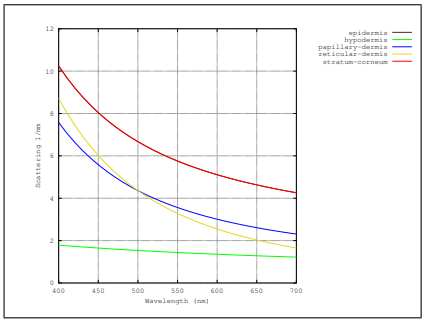
Fitting	R	G	B
w_i	(651.641, 68.357, 7.286, 1.511, 0.280, 0.041)	(381.727, 43.519, 5.270, 1.719, 0.451, 0.072)	(450.700, 44.670, 7.516, 2.482, 0.506, 0.052)
v_i	(0.546, 2.971, 26.045, 182.768, 1465.997, 11165.793)	(0.513, 2.526, 14.615, 60.846, 253.440, 1210.122)	(0.504, 2.385, 10.401, 35.256, 125.002, 596.212)
RMS,AMAX	5.91e-12, 8e-04f	2.89e-14, 3e-05f	4.19e-15, 1e-05f

Figure 39: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =0 v_m 1 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	0	1	5	0.05	2.1e-4	0.12802





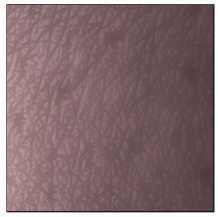
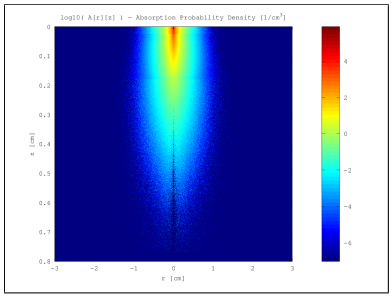
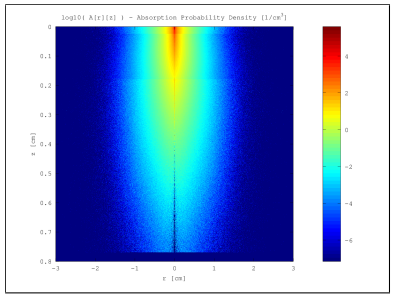
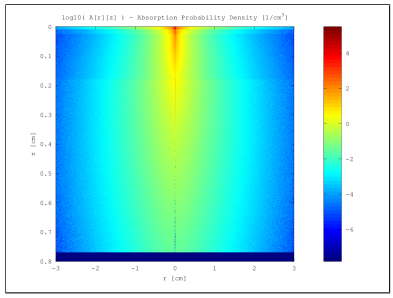


Figure 40: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

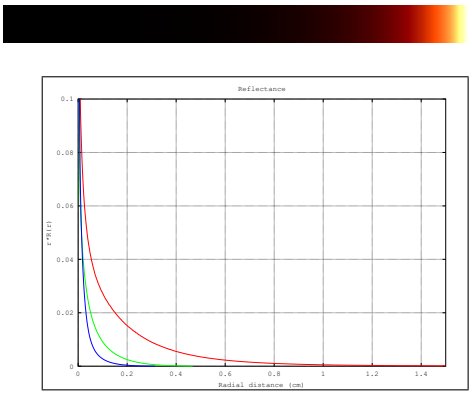


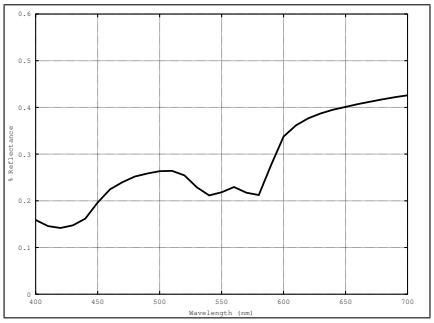




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	15.719	80.404	7.8358	57.559	5.5019	50.025
Papillary-dermis	0.015295	7.8938	55.809	4.723	35.614	0.65427	29.197
Reticular-dermis	0.15465	3.7192	60.173	2.2155	32.821	0.34621	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 41: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ_s') applying our skin aging model.



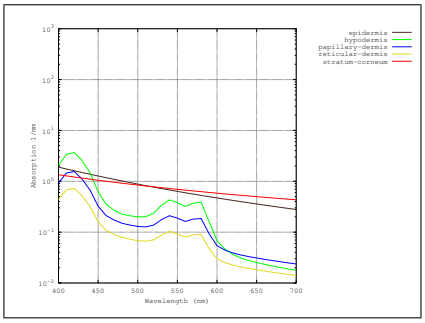


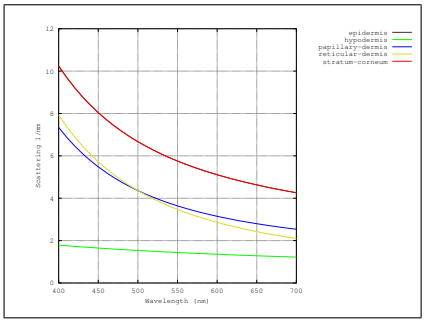
Fitting	R	G	B
w_i	(652.215, 67.226, 7.628, 1.604, 0.336, 0.051)	(392.611, 50.433, 5.811, 1.702, 0.426, 0.070)	(465.038, 53.620, 8.550, 2.621, 0.520, 0.062)
v_i	(0.541, 2.698, 24.647, 185.516, 1487.447, 10773.621)	(0.478, 2.140, 14.440, 73.537, 371.514, 1963.968)	(0.470, 2.029, 10.018, 39.251, 162.873, 852.639)
RMS,AMAX	2.07e-11, 1e-03f	5.18e-12, 4e-04f	1.66e-12, 3e-04f

Figure 42: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =0 v_m 1 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	0	1	5	0.05	2.1e-4	0.18059





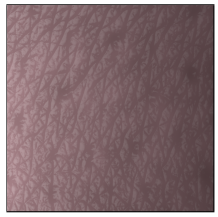
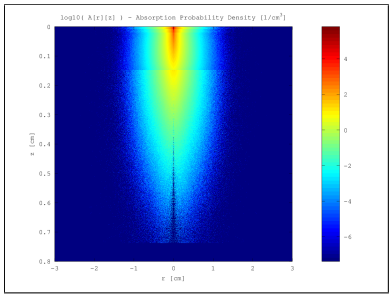
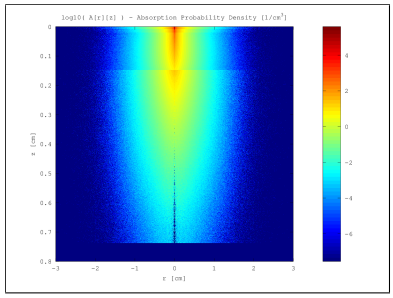
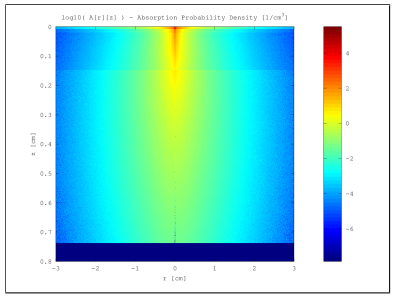


Figure 43: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

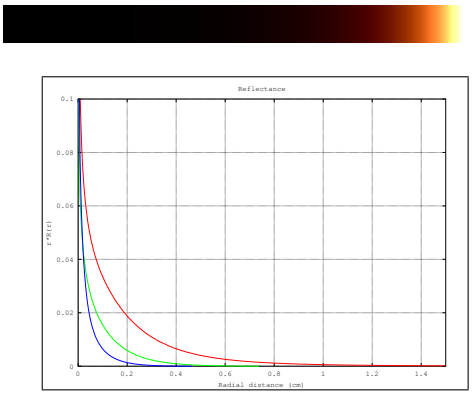


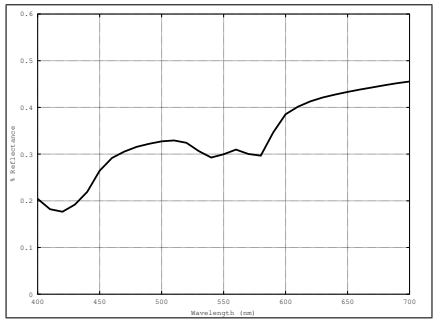




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	12.713	80.404	6.3339	57.559	4.4493	50.025
Papillary-dermis	0.012592	3.2353	54.81	1.8888	36.388	0.44328	30.688
Reticular-dermis	0.12732	1.6022	57.191	0.92727	34.723	0.25118	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 44: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



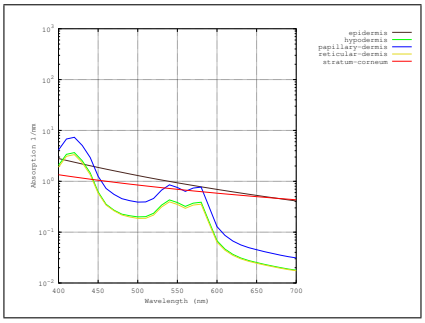


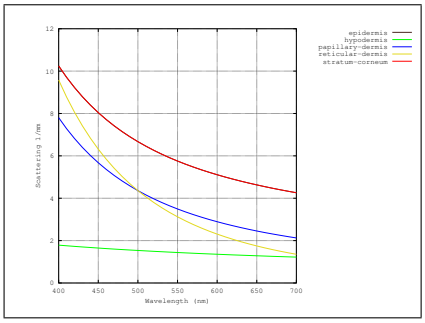
Fitting	R	G	B
w_i	(637.944, 42.313, 6.830, 1.546, 0.381, 0.059)	(371.998, 32.793, 5.256, 1.446, 0.387, 0.069)	(443.657, 40.747, 8.078, 2.335, 0.519, 0.074)
v_i	(0.594, 3.270, 28.130, 216.673, 1622.700, 10801.508)	(0.549, 2.479, 17.682, 106.313, 625.044, 3448.074)	(0.520, 2.241, 12.035, 54.409, 261.989, 1394.286)
RMS,AMAX	1.39e-10, 4e-03f	2.17e-11, 9e-04f	8.46e-12, 6e-04f

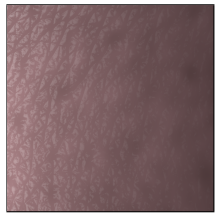
Figure 45: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =1 v_m 1 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	1	1	5	0.05	2.1e-4	0.069549







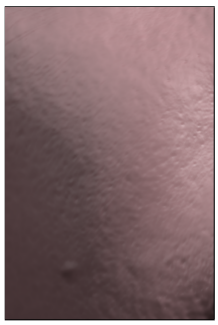
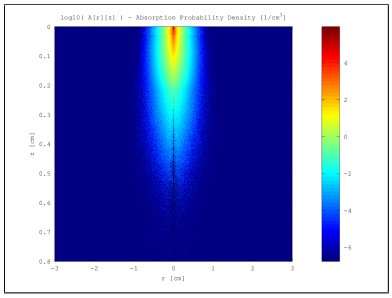
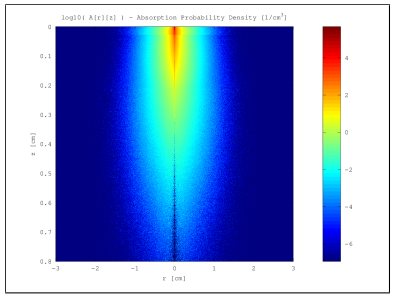
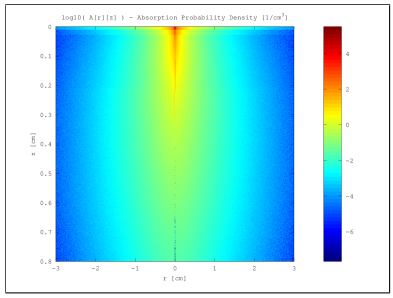


Figure 46: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

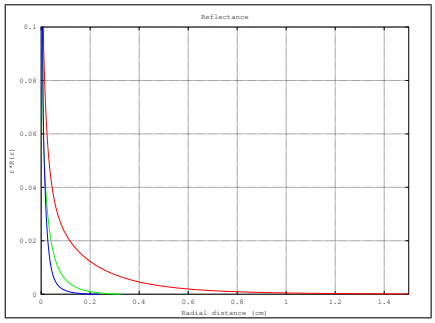


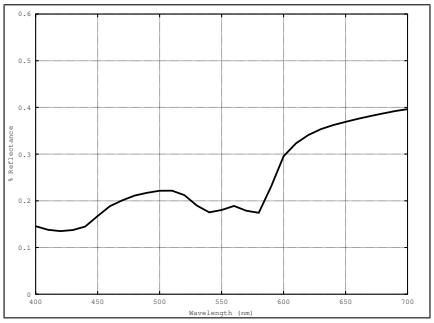




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	18.724	80.404	9.3377	57.559	6.5544	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 47: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



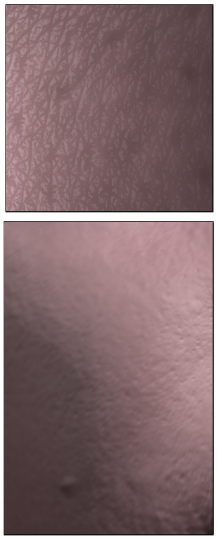


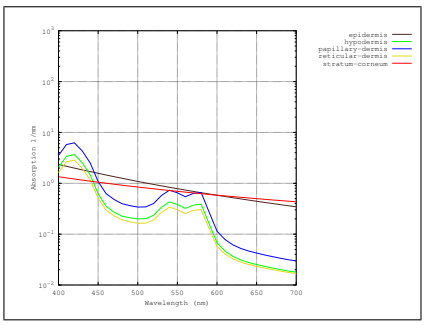
Fitting	R	G	B
w_i	(654.092, 68.839, 7.309, 1.521, 0.283, 0.041)	(384.807, 45.049, 5.359, 1.717, 0.442, 0.070)	(450.143, 45.128, 7.624, 2.508, 0.499, 0.052)
v_i	(0.542, 2.955, 25.854, 180.716, 1446.558, 11067.703)	(0.505, 2.480, 14.520, 61.400, 257.355, 1220.962)	(0.503, 2.360, 10.274, 35.343, 126.039, 599.606)
RMS,AMAX	5.36e-12, 8e-04f	2.39e-14, 3e-05f	9.68e-16, 7e-06f

Figure 48: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =1 v_m 1 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	1	1	5	0.05	2.1e-4	0.099683





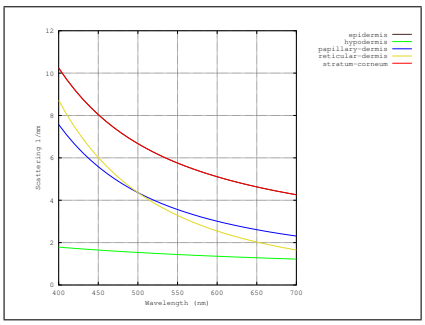
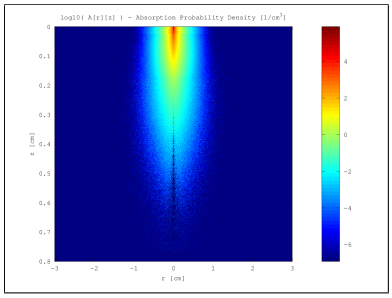
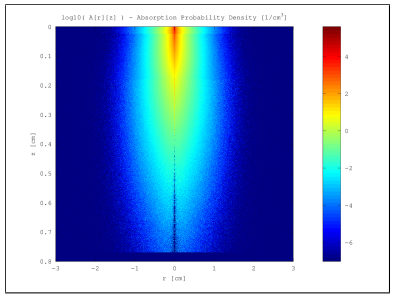
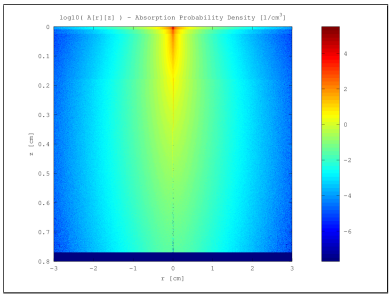


Figure 49: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

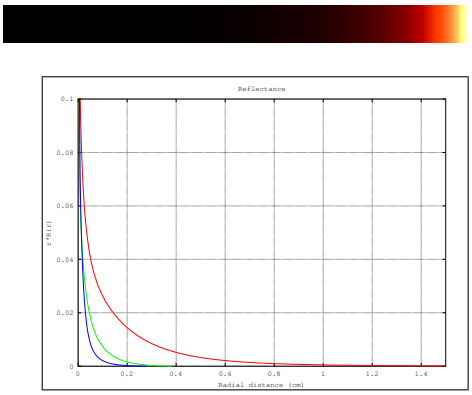


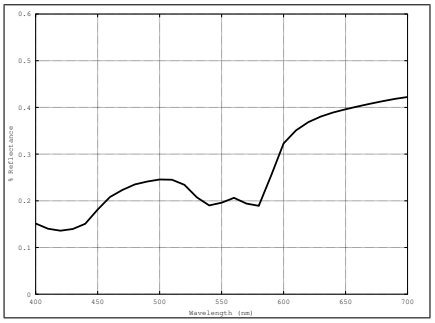




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	15.719	80.404	7.8358	57.559	5.5019	50.025
Papillary-dermis	0.015295	10.805	55.809	6.4944	35.614	0.78613	29.197
Reticular-dermis	0.15465	5.0424	60.173	3.0206	32.821	0.40559	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 50: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



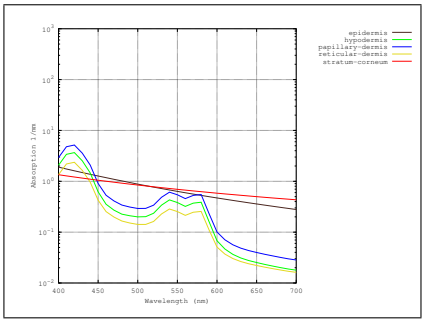


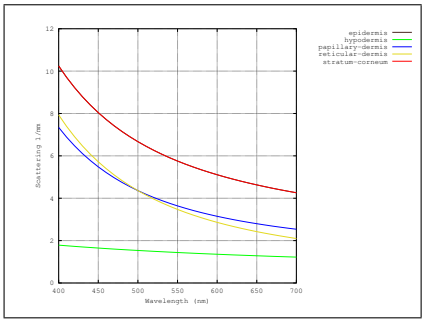
Fitting	R	G	B
w_i	(279.091, 255.669, 110.043, 4.826, 3.147, -0.055)	(346.849, 84.629, 33.498, 4.370, 0.858, -0.269)	(473.360, 58.053, 8.831, 2.751, 0.546, 0.061)
v_i	(0.801, 0.181, 1.139, 4.113, 70.663, 4.358)	(0.421, 0.833, 3.070, 34.158, 396.980, 403.383)	(0.454, 1.914, 9.289, 35.412, 140.714, 723.424)
RMS,AMAX	6.11e-02, 8e+01f	1.27e-09, 7e-03f	9.27e-13, 2e-04f

Figure 51: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =1 v_m 1 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	1	1	5	0.05	2.1e-4	0.14797





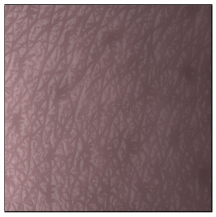
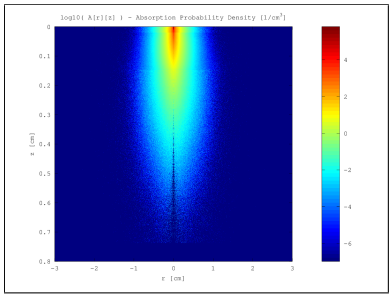
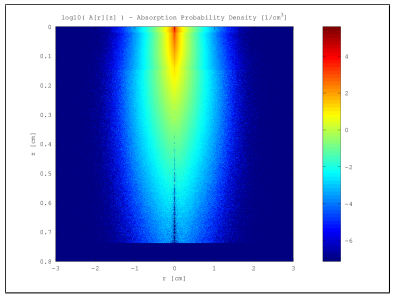
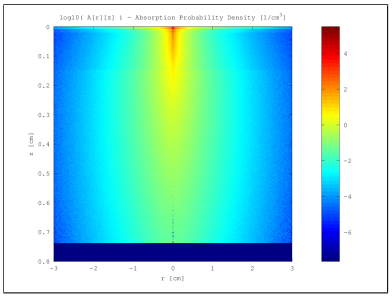


Figure 52: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

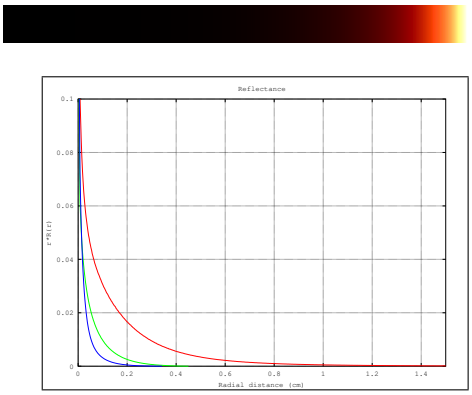


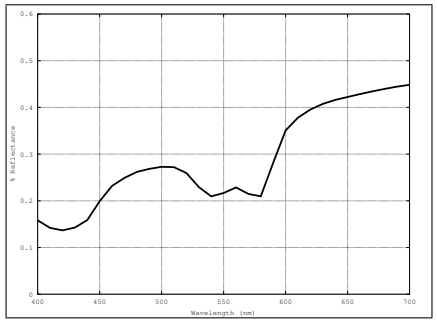




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	12.713	80.404	6.3339	57.559	4.4493	50.025
Papillary-dermis	0.012592	9.0584	54.81	5.4315	36.388	0.70701	30.688
Reticular-dermis	0.12732	4.2485	57.191	2.5375	34.723	0.36996	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 53: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



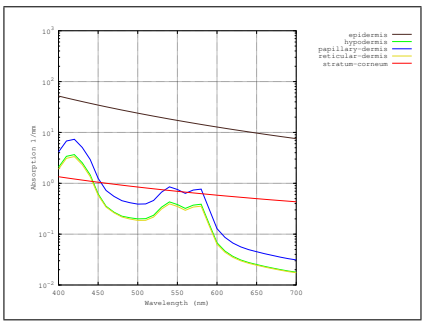


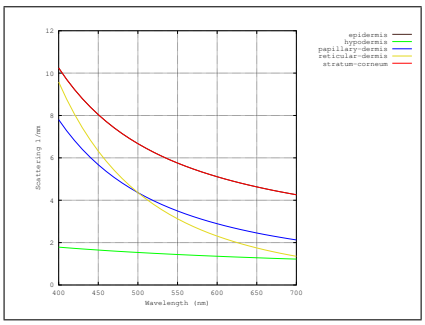
Fitting	R	G	B
w_i	(639.991, 44.999, 7.028, 1.566, 0.376, 0.056)	(380.213, 43.964, 5.916, 1.762, 0.473, 0.082)	(1055.429, 96.734, 10.312, 3.126, 0.642, 0.076)
v_i	(0.586, 3.079, 26.072, 198.217, 1480.200, 10012.531)	(0.505, 2.007, 13.277, 69.121, 352.005, 1825.367)	(0.240, 1.403, 7.936, 33.676, 149.853, 843.852)
RMS,AMAX	9.13e-11, 3e-03f	4.34e-11, 1e-03f	2.19e-10, 3e-03f

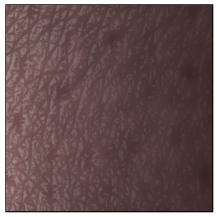
Figure 54: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =0 v_m 20 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	0	20	5	0.05	2.1e-4	0.081579







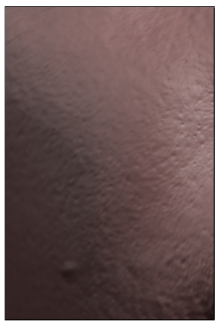
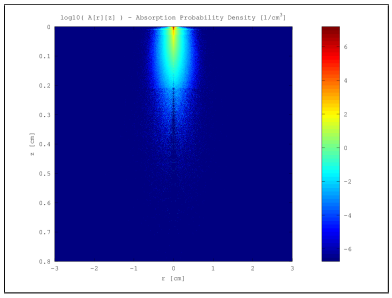
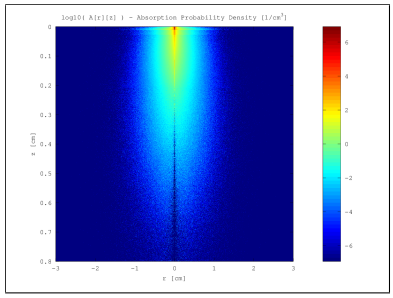
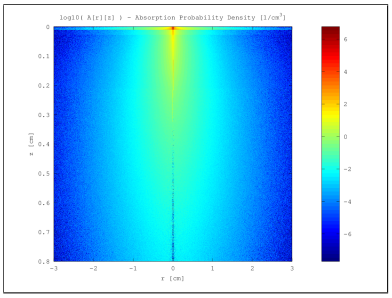


Figure 55: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

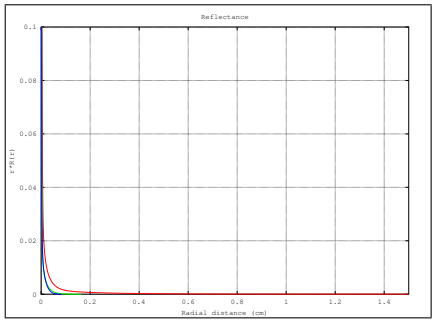


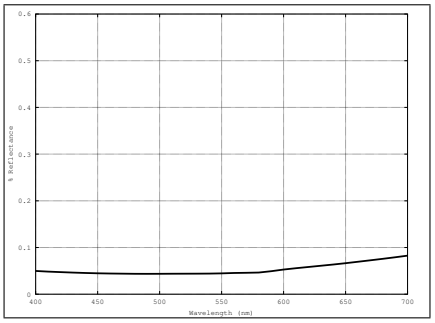




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	345.05	80.404	172.41	57.559	120.83	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 56: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



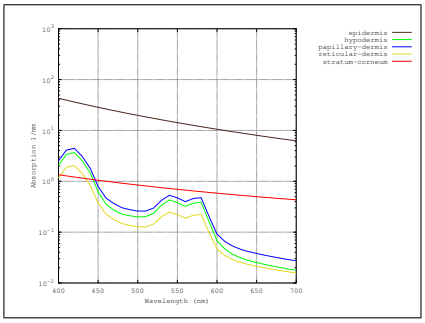


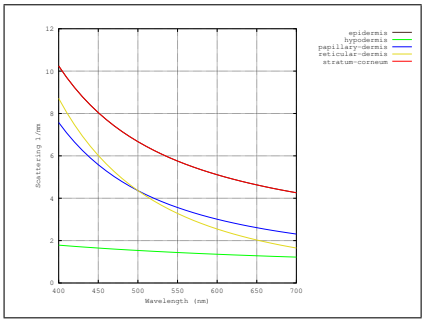
Fitting	R	G	B
w_i	(773.254, 58.238, 5.032, 1.050, 0.164, 0.009)	(395.159, 193.480, 27.413, 2.241, 0.471, 0.086)	(465.463, 189.426, 4.878, 1.108, 0.232, 0.128)
v_i	(0.386, 1.521, 6.727, 36.107, 229.422, 3857.959)	(0.263, 0.414, 1.329, 6.277, 32.042, 147.176)	(0.263, 0.470, 3.101, 15.186, 62.393, 0.016)
RMS,AMAX	2.37e-08, 4e-02f	8.10e-09, 1e-02f	1.05e-10, 1e-03f

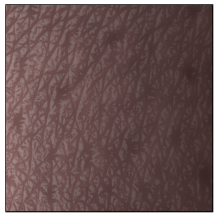
Figure 57: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =0 v_m 20 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	0	20	5	0.05	2.1e-4	0.12802







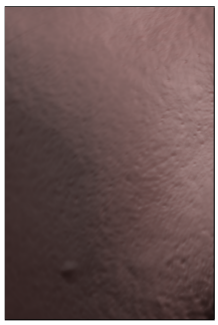
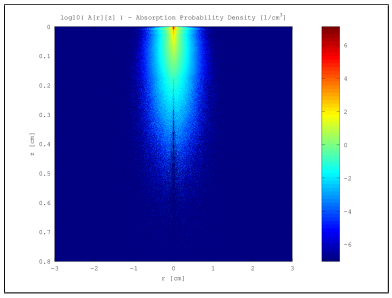
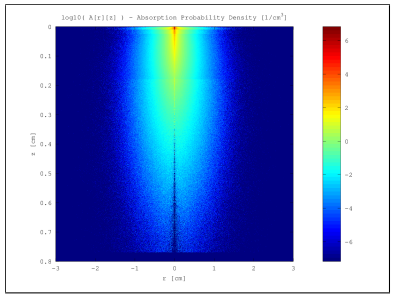
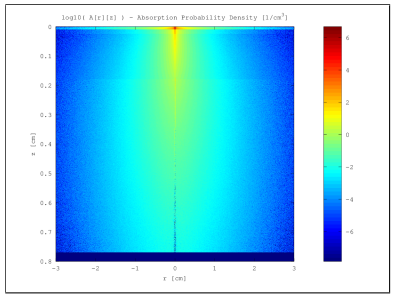


Figure 58: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

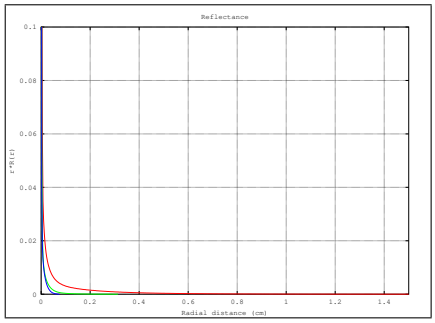


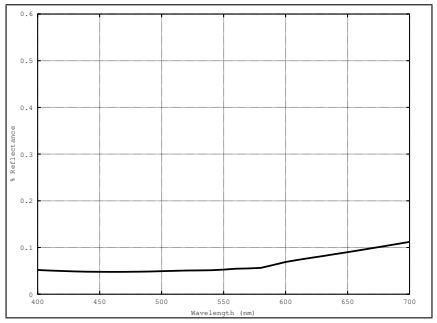




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	284.94	80.404	142.37	57.559	99.777	50.025
Papillary-dermis	0.015295	7.8938	55.809	4.723	35.614	0.65427	29.197
Reticular-dermis	0.15465	3.7192	60.173	2.2155	32.821	0.34621	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 59: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



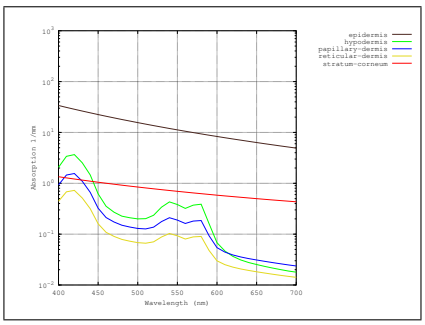


Fitting	R	G	B
w_i	(677.325, 37.295, 3.306, 0.580, 0.073, 0.009)	(459.625, 34.660, 4.061, 0.984, 0.223, 0.016)	(110.910, 103.924, 97.155, 59.496, 35.627, 0.470)
v_i	(0.470, 2.176, 15.023, 96.056, 747.636, 7255.097)	(0.363, 1.190, 3.942, 17.655, 87.261, 577.259)	(0.484, 0.421, 0.455, 0.520, 0.828, 0.039)
RMS,AMAX	5.16e-13, 2e-04f	8.28e-09, 1e-02f	1.84e-05, 6e-01f

Figure 60: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =0 v_m 20 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	0	20	5	0.05	2.1e-4	0.18059



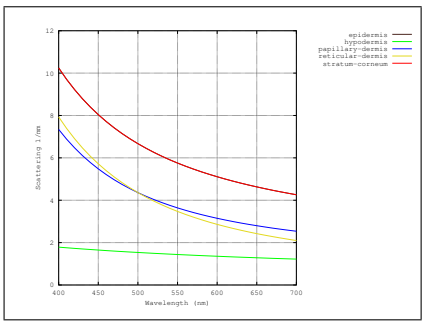
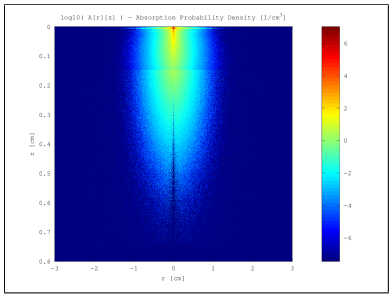
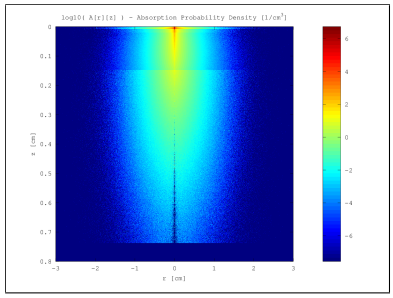
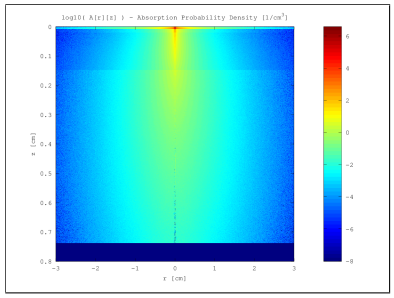


Figure 61: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

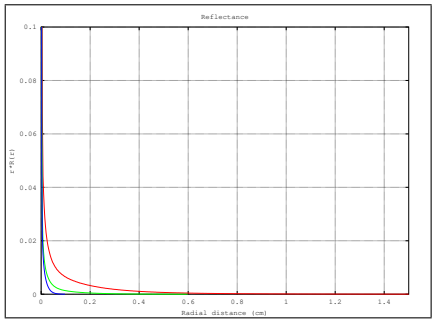


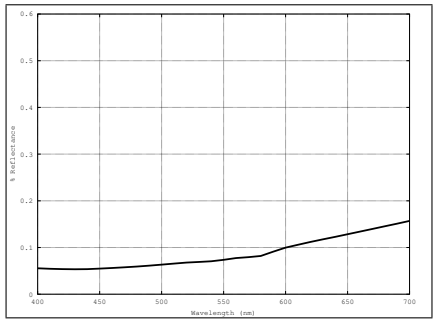




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	224.83	80.404	112.33	57.559	78.726	50.025
Papillary-dermis	0.012592	3.2353	54.81	1.8888	36.388	0.44328	30.688
Reticular-dermis	0.12732	1.6022	57.191	0.92727	34.723	0.25118	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 62: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



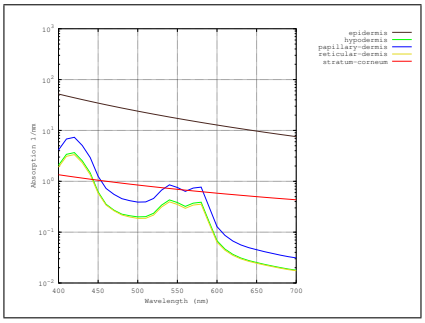


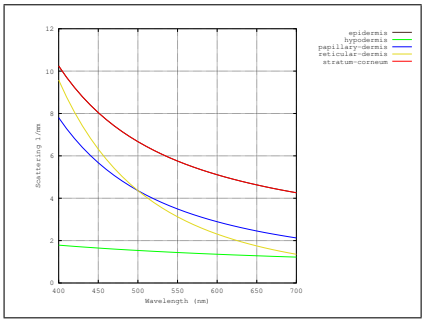
Fitting	R	G	B
w_i	(301.379, 183.434, 116.391, 41.326, 4.978, -0.121)	(388.433, 16.918, 2.217, 0.491, 0.081, 0.010)	(114.675, 93.116, 83.356, 57.724, 48.026, 0.000)
v_i	(0.525, 0.498, 0.671, 1.608, 25.012, 1.678)	(0.468, 2.023, 11.045, 56.887, 310.193, 2313.919)	(0.421, 0.599, 0.325, 0.647, 0.717, 0.088)
RMS,AMAX	2.44e-05, 1e+00f	3.21e-12, 3e-04f	4.00e-03, 1e+01f

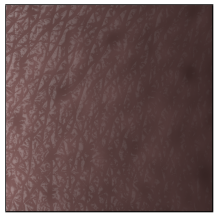
Figure 63: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =1 v_m 20 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	1	20	5	0.05	2.1e-4	0.069549







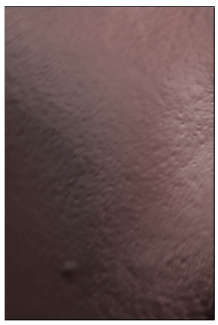
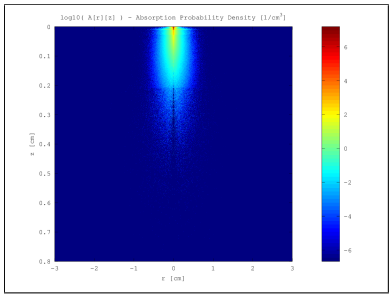
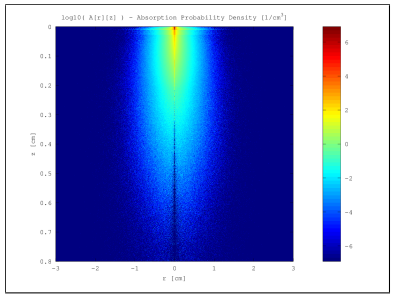
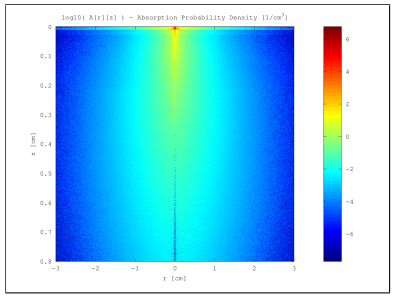


Figure 64: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

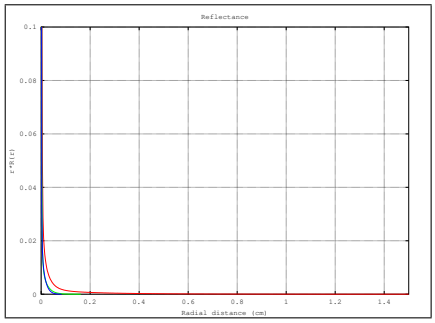


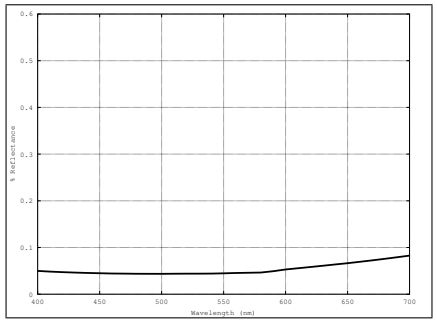




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	345.05	80.404	172.41	57.559	120.83	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 65: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



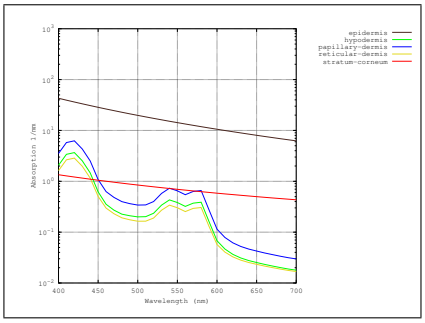


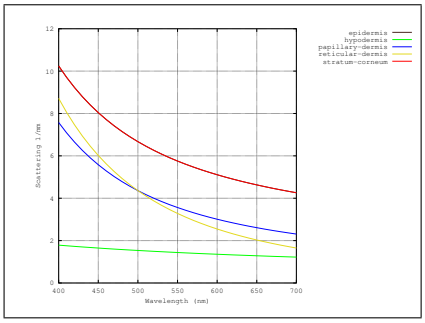
Fitting	R	G	B
w_i	(752.335, 75.005, 16.961, 1.866, 0.263, 0.012)	(365.687, 208.633, 21.766, 2.087, 0.463, 0.084)	(309.233, 289.090, 95.278, 4.768, 1.111, 0.239)
v_i	(0.374, 1.006, 3.139, 22.094, 165.172, 3114.466)	(0.258, 0.444, 1.450, 6.527, 32.716, 148.721)	(0.256, 0.294, 0.552, 3.130, 14.925, 61.662)
RMS,AMAX	5.19e-07, 2e-01f	7.75e-09, 1e-02f	2.45e-11, 7e-04f

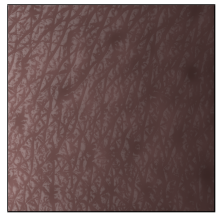
Figure 66: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =1 v_m 20 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	1	20	5	0.05	2.1e-4	0.099683







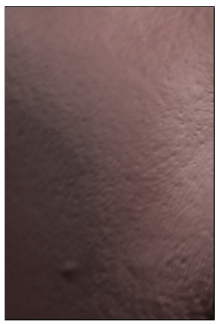
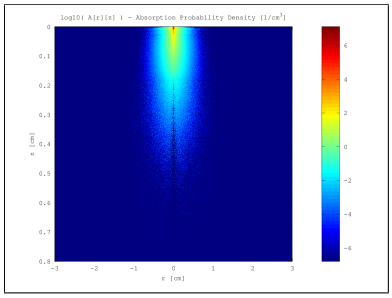
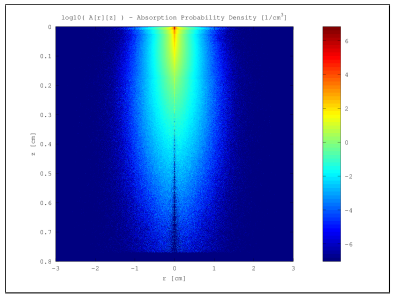
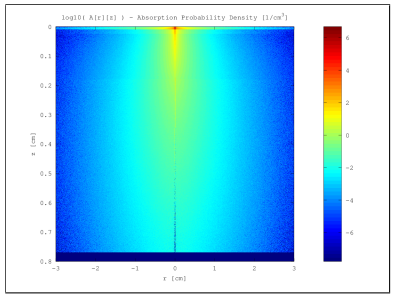


Figure 67: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

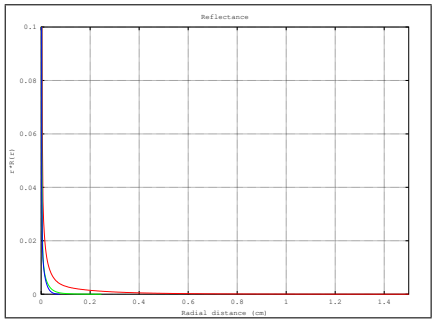


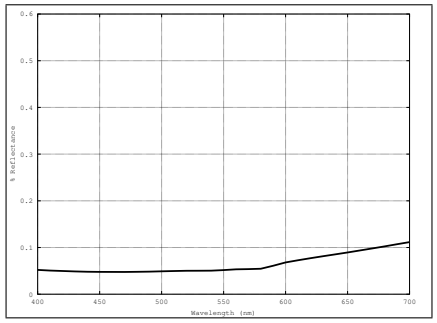




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	284.94	80.404	142.37	57.559	99.777	50.025
Papillary-dermis	0.015295	10.805	55.809	6.4944	35.614	0.78613	29.197
Reticular-dermis	0.15465	5.0424	60.173	3.0206	32.821	0.40559	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 68: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.





Fitting	R	G	B
w_i	(187.947, 183.836, 145.651, 138.714, 6.944, -0.012)	(322.531, 179.637, 20.301, 1.937, 0.403, 0.045)	(104.232, 102.594, 102.324, 69.773, 49.004, -0.102)
v_i	(0.568, 0.422, 0.737, 0.427, 11.405, 0.058)	(0.299, 0.495, 1.712, 9.266, 49.933, 276.495)	(0.484, 0.306, 0.524, 0.474, 0.731, 0.214)
RMS,AMAX	1.25e-03, 9e+00f	1.55e-08, 2e-02f	4.21e-05, 1e+00f

Figure 69: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =1 v_m 20 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	1	20	5	0.05	2.1e-4	0.14797

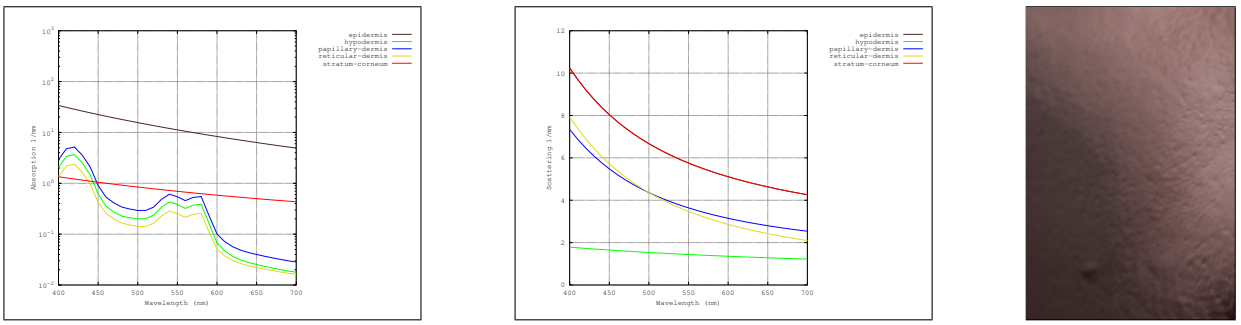
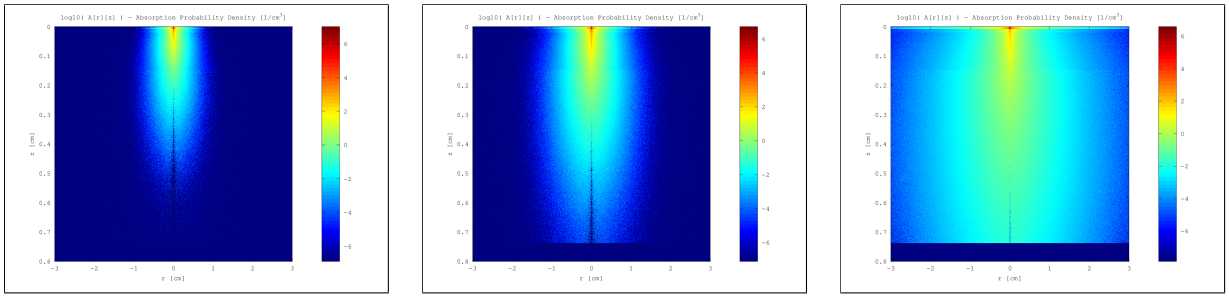
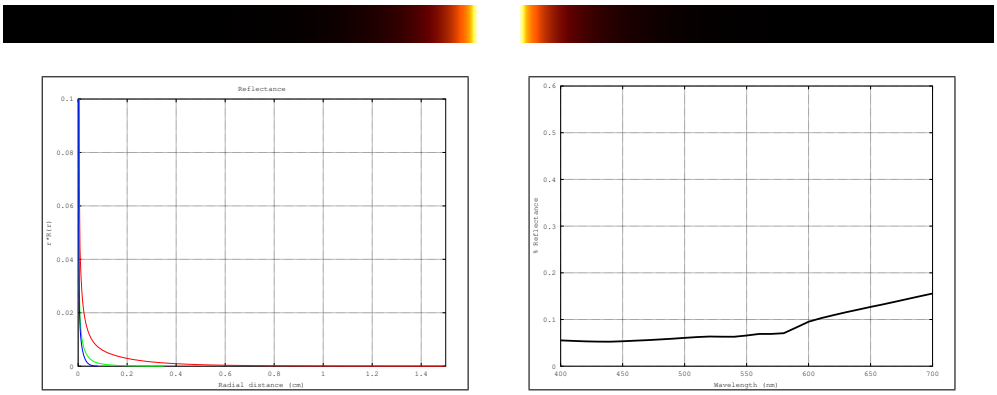


Figure 70: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.



Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	224.83	80.404	112.33	57.559	78.726	50.025
Papillary-dermis	0.012592	9.0584	54.81	5.4315	36.388	0.70701	30.688
Reticular-dermis	0.12732	4.2485	57.191	2.5375	34.723	0.36996	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 71: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.

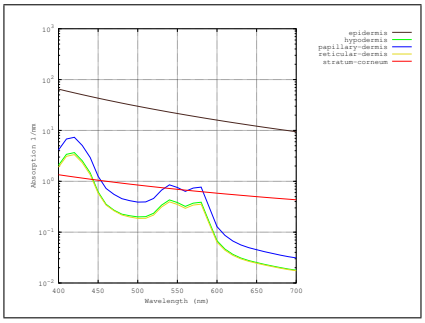


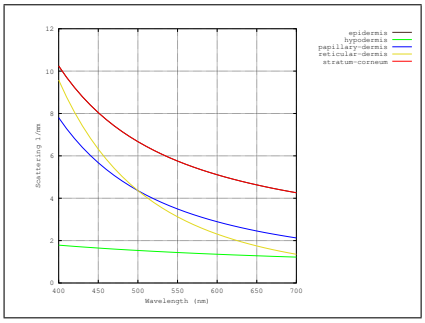
Fitting	R	G	B
w_i	(658.158, 33.218, 4.098, 0.766, 0.121, 0.017)	(450.497, 37.602, 2.954, 0.685, 0.148, 0.015)	(103.862, 100.245, 76.648, 73.804, 50.136, -0.329)
v_i	(0.503, 2.336, 16.328, 109.755, 861.222, 7063.385)	(0.377, 1.375, 7.704, 35.009, 160.793, 1086.794)	(0.515, 0.582, 0.450, 0.382, 0.724, 0.816)
RMS,AMAX	2.81e-12, 5e-04f	1.55e-08, 2e-02f	1.03e-04, 2e+00f

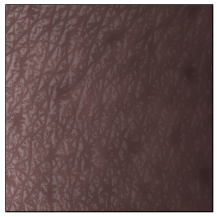
Figure 72: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =0 v_m 25 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	0	25	5	0.05	2.1e-4	0.081579







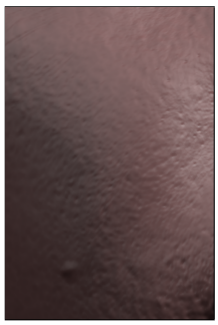
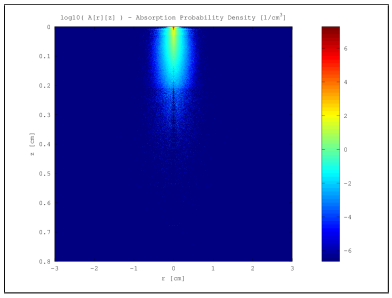
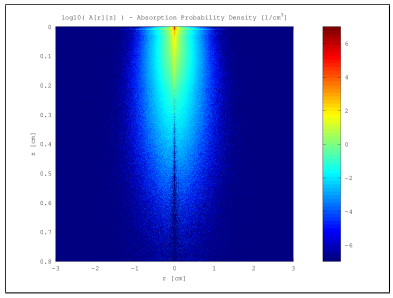
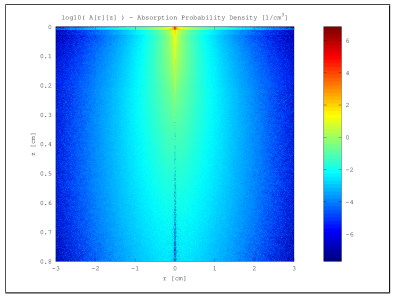


Figure 73: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

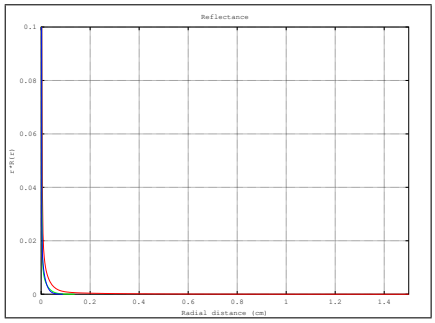


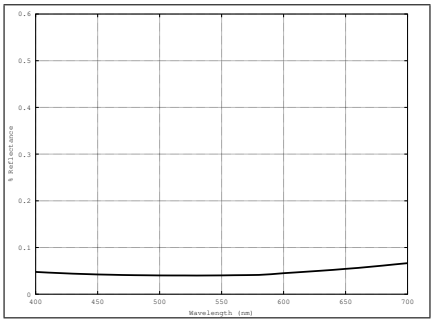




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	430.93	80.404	215.32	57.559	150.9	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 74: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.





Fitting	R	G	B
w_i	(776.315, 95.144, 15.028, 1.578, 0.253, 0.009)	(110.000, 71.221, 57.758, 53.557, 52.966, 1.502)	(100.492, 91.483, 91.420, 79.708, 57.341, 33.101)
v_i	(0.345, 0.849, 2.955, 20.214, 140.629, 2503.792)	(0.550, 0.497, 0.649, 0.710, 0.345, 0.070)	(0.401, 0.639, 0.470, 0.362, 0.331, 0.014)
RMS,AMAX	1.17e-07, 9e-02f	9.54e-04, 4e+00f	5.31e-06, 3e-01f

Figure 75: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =0 v_m 25 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	0	25	5	0.05	2.1e-4	0.12802

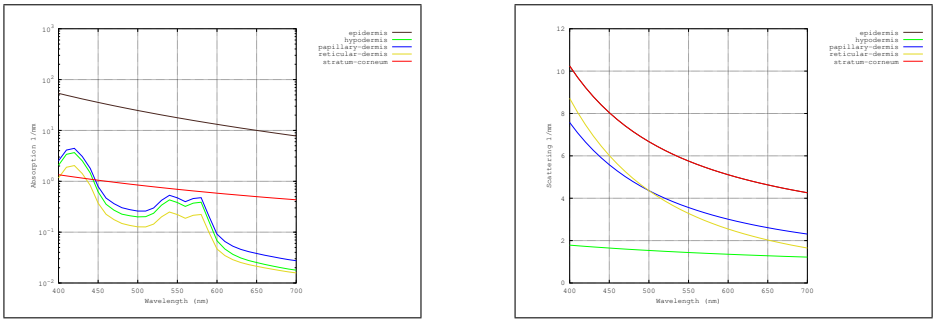
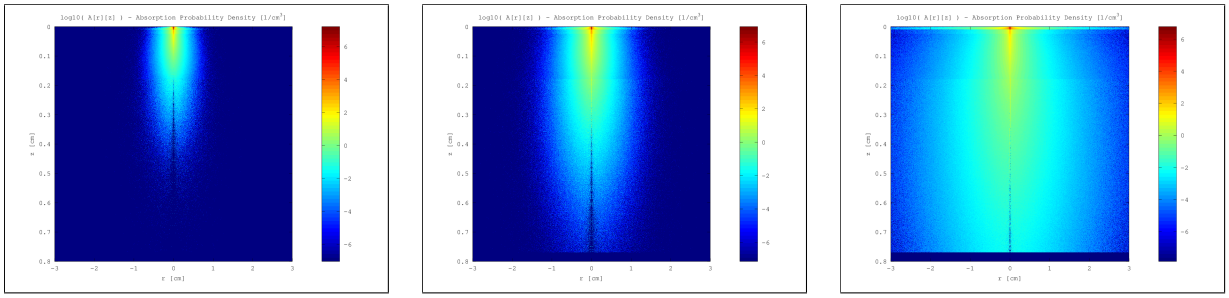
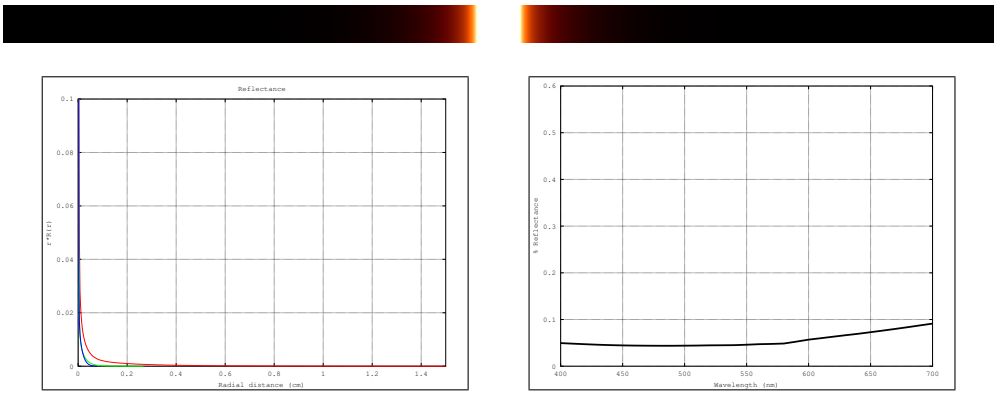


Figure 76: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.



Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	355.79	80.404	177.77	57.559	124.59	50.025
Papillary-dermis	0.015295	7.8938	55.809	4.723	35.614	0.65427	29.197
Reticular-dermis	0.15465	3.7192	60.173	2.2155	32.821	0.34621	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 77: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.

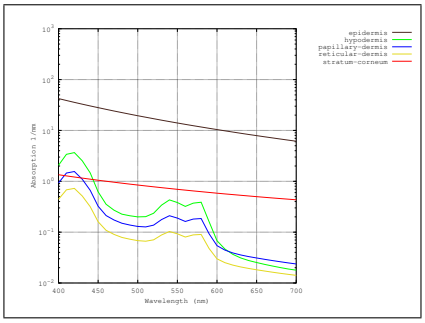


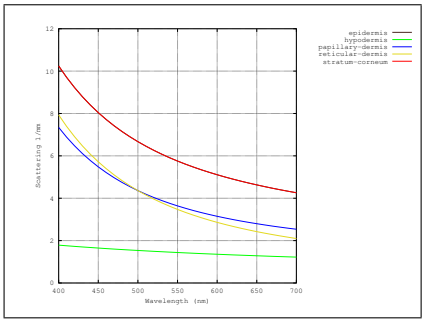
Fitting	R	G	B
w_i	(683.152, 31.500, 2.807, 0.523, 0.062, 0.007)	(351.924, 185.303, 20.770, 1.887, 0.406, 0.052)	(140.791, 120.906, 116.824, 91.769, 3.187, -0.536)
v_i	(0.459, 2.115, 13.737, 84.471, 605.365, 6520.480)	(0.281, 0.450, 1.463, 7.702, 42.887, 220.839)	(0.388, 0.516, 0.368, 0.357, 12.162, 11.343)
RMS,AMAX	1.06e-12, 3e-04f	1.80e-08, 2e-02f	5.21e-08, 3e-02f

Figure 78: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =0 v_m 25 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	0	25	5	0.05	2.1e-4	0.18059





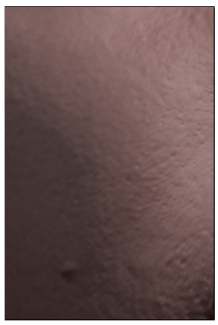
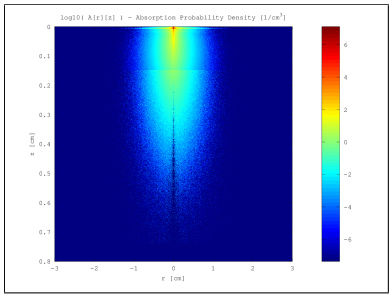
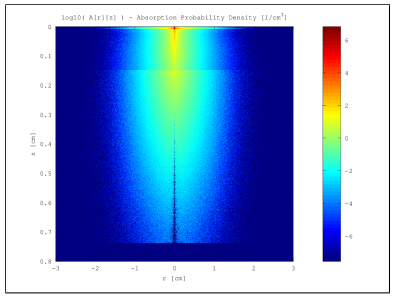
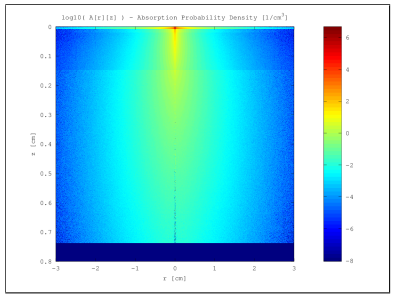


Figure 79: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

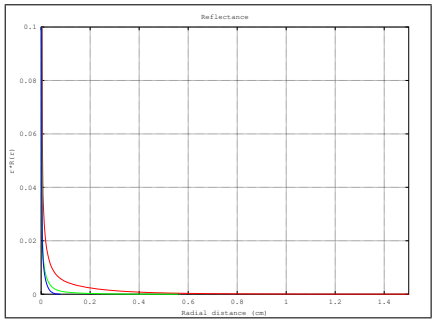


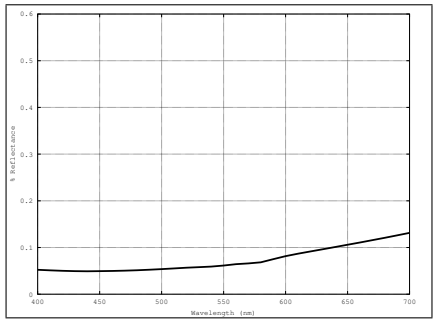




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	280.65	80.404	140.22	57.559	98.273	50.025
Papillary-dermis	0.012592	3.2353	54.81	1.8888	36.388	0.44328	30.688
Reticular-dermis	0.12732	1.6022	57.191	0.92727	34.723	0.25118	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 80: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ_s') applying our skin aging model.



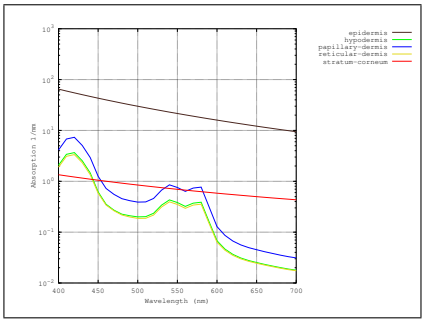


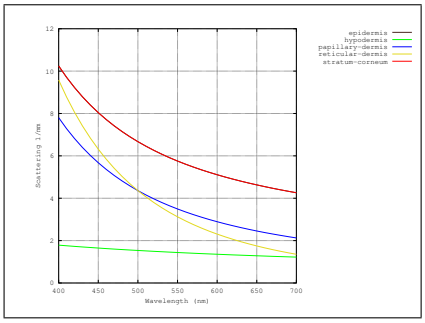
Fitting	R	G	B
w_i	(661.166, 28.140, 3.470, 0.649, 0.097, 0.013)	(471.203, 34.185, 2.557, 0.568, 0.103, 0.009)	(737.577, 162.312, 107.367, 103.934, 98.145, 4.249)
v_i	(0.493, 2.353, 15.982, 107.012, 850.800, 7189.440)	(0.359, 1.313, 7.514, 38.639, 198.381, 1811.636)	(0.025, 0.374, 0.392, 0.396, 0.550, 8.028)
RMS,AMAX	1.83e-12, 4e-04f	2.86e-09, 8e-03f	9.76e-05, 1e+00f

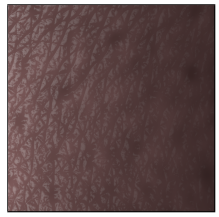
Figure 81: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =1 v_m 25 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	1	25	5	0.05	2.1e-4	0.069549







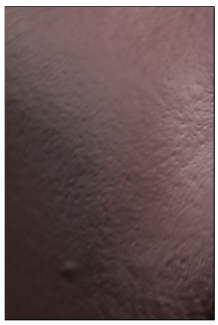
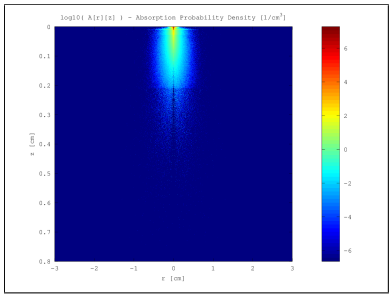
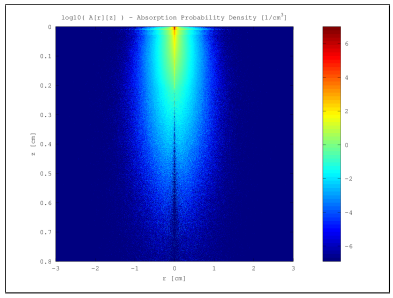
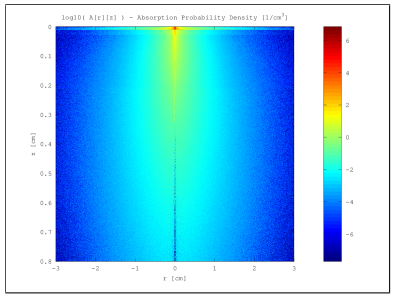


Figure 82: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

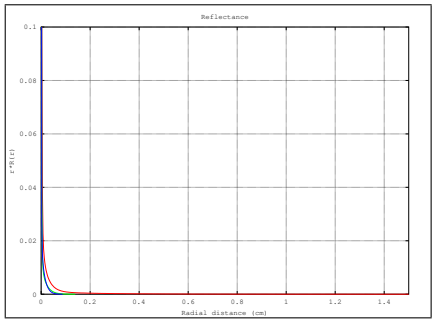


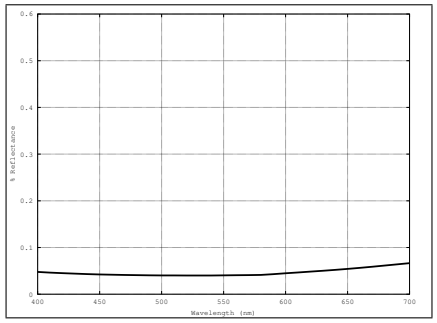




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	430.93	80.404	215.32	57.559	150.9	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 83: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ_s') applying our skin aging model.





Fitting	R	G	B
w_i	(774.315, 63.117, 10.314, 1.409, 0.227, 0.008)	(327.500, 210.492, 20.682, 1.881, 0.443, 0.090)	(112.079, 93.069, 71.569, 71.469, 66.218, 1.308)
v_i	(0.368, 1.085, 3.503, 22.472, 151.952, 2725.174)	(0.279, 0.404, 1.290, 5.943, 30.176, 133.754)	(0.459, 0.377, 0.388, 0.384, 0.706, 0.069)
RMS,AMAX	1.34e-07, 9e-02f	4.49e-09, 9e-03f	1.33e-05, 5e-01f

Figure 84: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =1 v_m 25 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	1	25	5	0.05	2.1e-4	0.099683

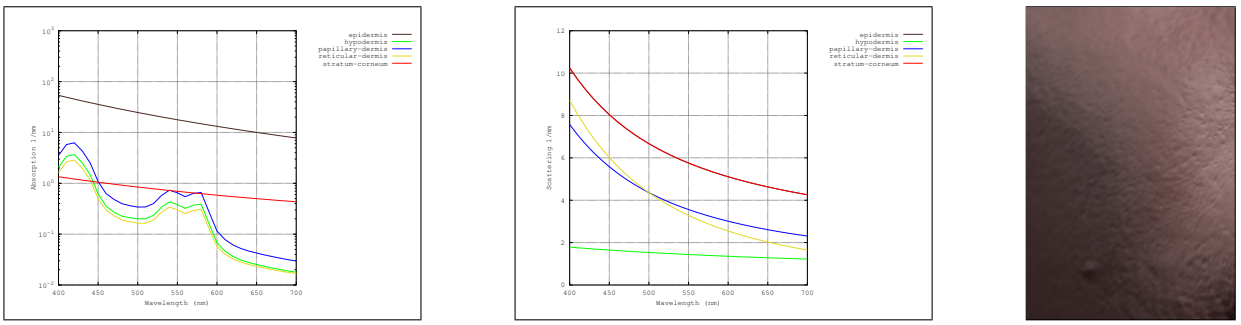
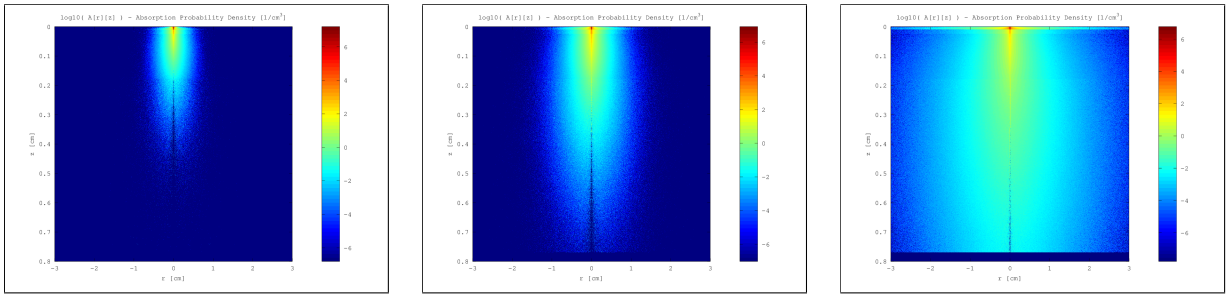
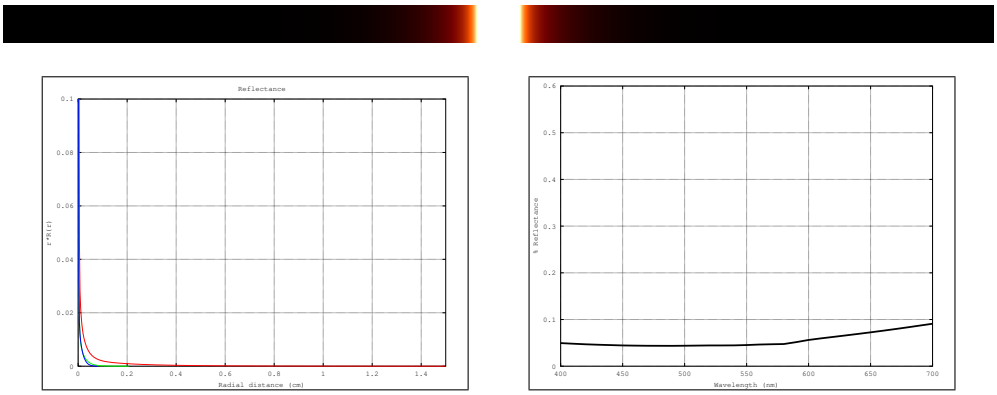


Figure 85: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.



Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	355.79	80.404	177.77	57.559	124.59	50.025
Papillary-dermis	0.015295	10.805	55.809	6.4944	35.614	0.78613	29.197
Reticular-dermis	0.15465	5.0424	60.173	3.0206	32.821	0.40559	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 86: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.

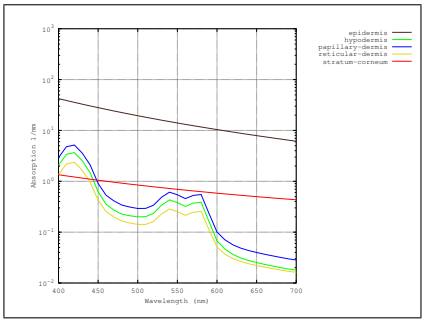


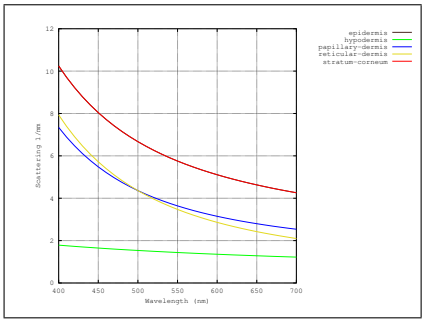
Fitting	R	G	B
w_i	(681.863, 31.034, 2.774, 0.532, 0.064, 0.007)	(427.234, 129.085, 13.201, 1.522, 0.368, 0.052)	(302.836, 297.445, 107.451, 4.796, 1.113, 0.242)
v_i	(0.460, 2.131, 13.667, 82.371, 575.219, 6308.924)	(0.285, 0.544, 1.813, 8.913, 44.561, 206.730)	(0.260, 0.275, 0.531, 3.083, 14.804, 60.547)
RMS,AMAX	6.50e-13, 2e-04f	3.69e-09, 8e-03f	3.27e-10, 3e-03f

Figure 87: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =1 v_m 25 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	1	25	5	0.05	2.1e-4	0.14797





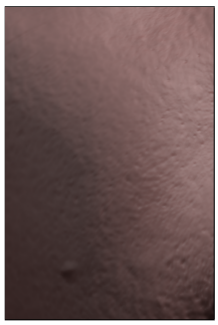
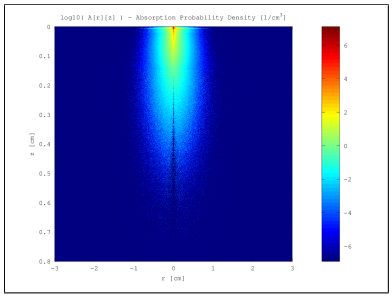
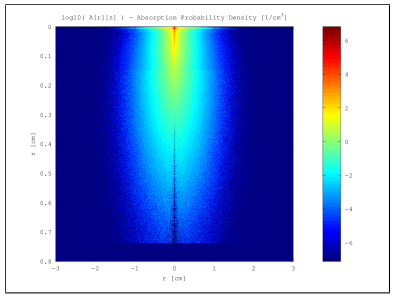
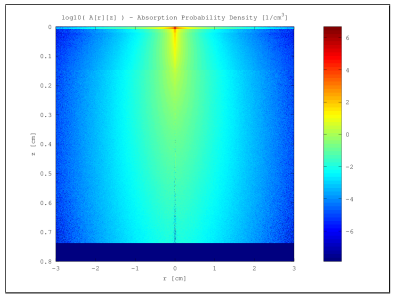


Figure 88: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

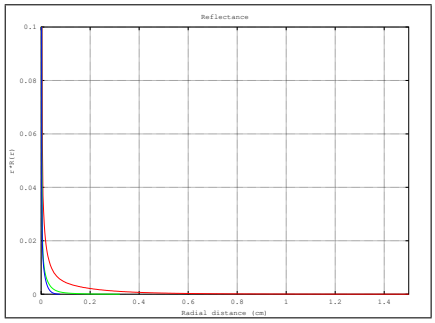


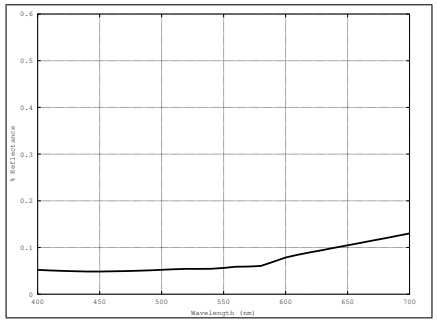




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	280.65	80.404	140.22	57.559	98.273	50.025
Papillary-dermis	0.012592	9.0584	54.81	5.4315	36.388	0.70701	30.688
Reticular-dermis	0.12732	4.2485	57.191	2.5375	34.723	0.36996	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 89: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ_s') applying our skin aging model.



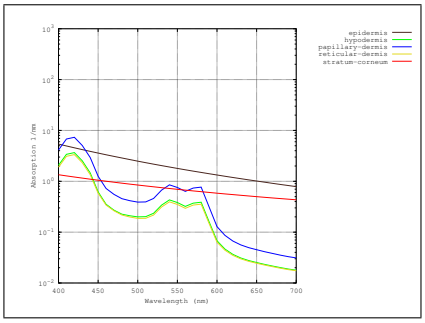


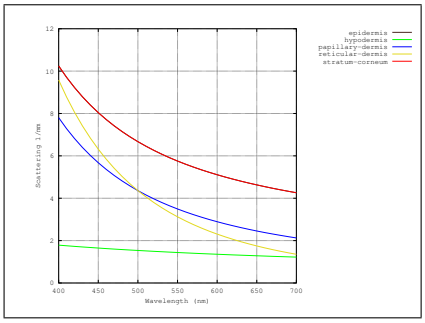
Fitting	R	G	B
w_i	(662.594, 29.480, 3.541, 0.664, 0.098, 0.013)	(422.518, 85.898, 8.559, 1.364, 0.282, 0.022)	(116.431, 97.634, 83.524, 77.835, 44.363, 37.538)
v_i	(0.490, 2.282, 15.500, 101.538, 788.812, 6736.604)	(0.328, 0.717, 2.718, 14.966, 84.103, 628.511)	(0.429, 0.540, 0.495, 0.326, 0.801, 0.094)
RMS,AMAX	1.53e-12, 3e-04f	2.16e-08, 2e-02f	1.97e-05, 7e-01f

Figure 90: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =0 v_m 2 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	0	2	5	0.05	2.1e-4	0.081579





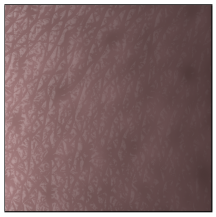
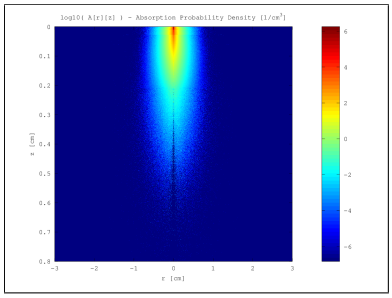
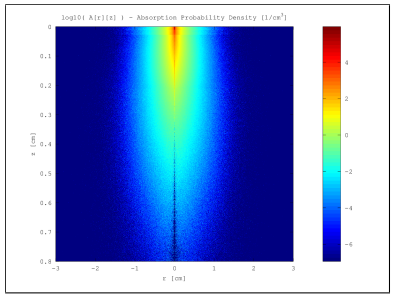
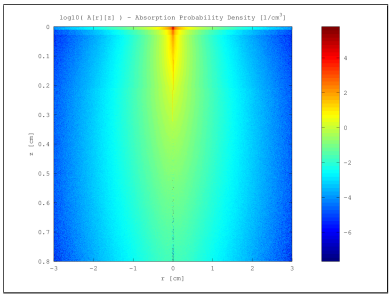


Figure 91: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

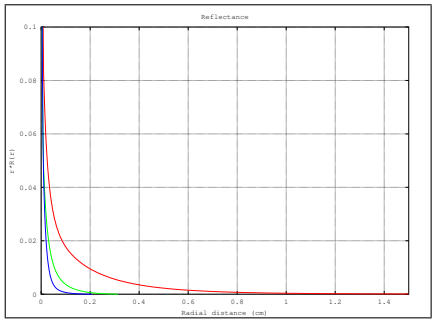


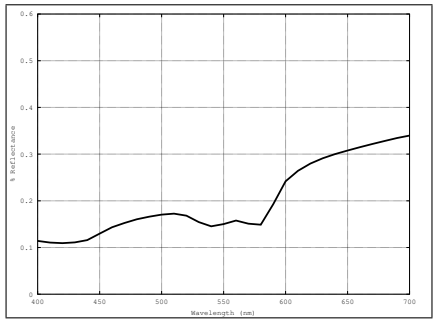




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	35.899	80.404	17.92	57.559	12.569	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 92: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



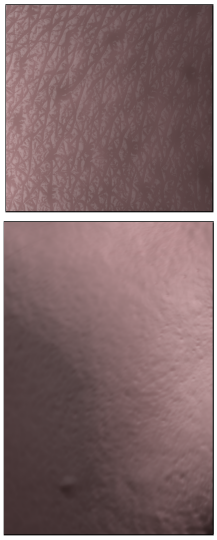


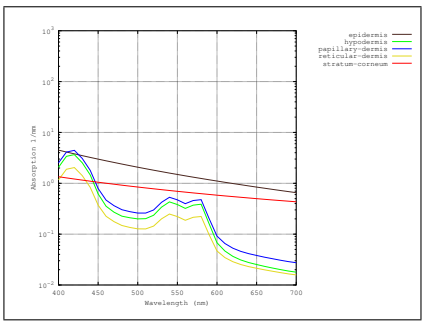
Fitting	R	G	B
w_i	(655.821, 65.735, 6.742, 1.372, 0.238, 0.033)	(384.441, 41.320, 4.818, 1.485, 0.354, 0.053)	(454.723, 39.512, 6.395, 1.971, 0.376, 0.036)
v_i	(0.536, 2.901, 24.454, 166.727, 1351.886, 10624.359)	(0.503, 2.446, 13.670, 55.520, 231.976, 1134.109)	(0.490, 2.258, 9.288, 30.525, 104.616, 491.145)
RMS,AMAX	2.70e-12, 5e-04f	7.98e-15, 2e-05f	1.40e-15, 8e-06f

Figure 93: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =0 v_m 2 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	0	2	5	0.05	2.1e-4	0.12802





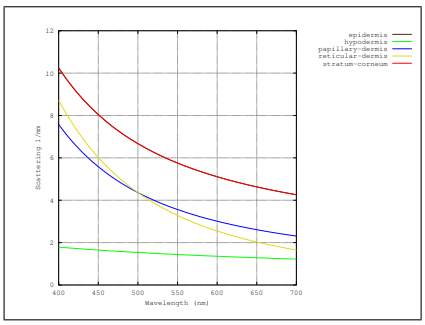
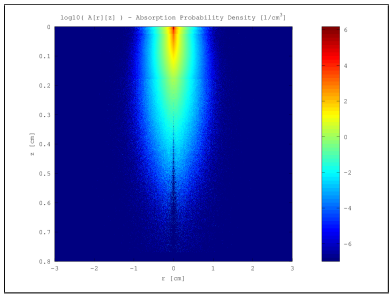
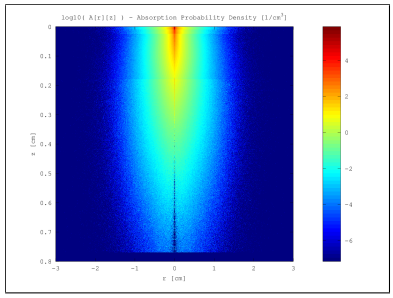
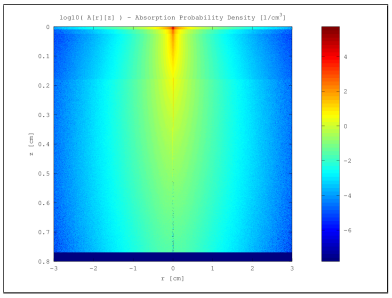


Figure 94: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

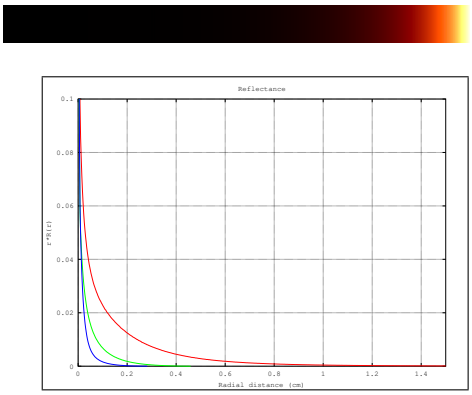


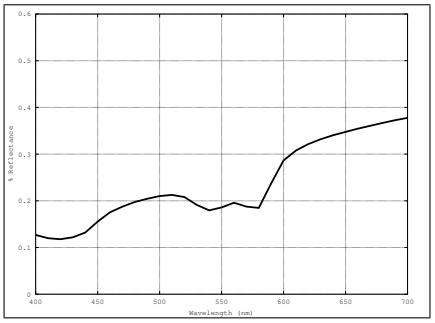




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	29.888	80.404	14.916	57.559	10.464	50.025
Papillary-dermis	0.015295	7.8938	55.809	4.723	35.614	0.65427	29.197
Reticular-dermis	0.15465	3.7192	60.173	2.2155	32.821	0.34621	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 95: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



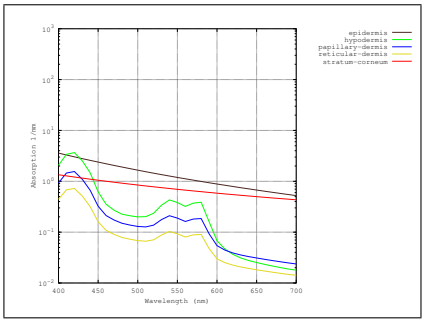


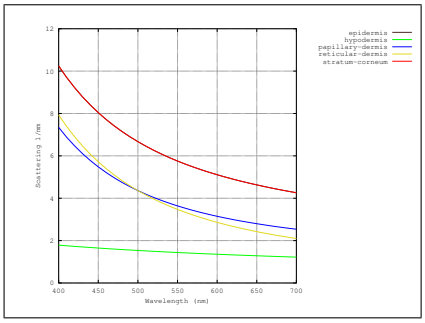
Fitting	R	G	B
w_i	(658.060, 66.698, 7.286, 1.493, 0.299, 0.044)	(395.712, 48.244, 5.415, 1.516, 0.355, 0.057)	(469.634, 49.592, 7.519, 2.201, 0.409, 0.046)
v_i	(0.529, 2.611, 23.272, 172.257, 1385.909, 10275.716)	(0.472, 2.097, 13.730, 67.677, 342.245, 1862.011)	(0.459, 1.935, 9.111, 34.263, 139.393, 739.537)
RMS,AMAX	1.35e-11, 1e-03f	3.57e-12, 3e-04f	1.01e-12, 2e-04f

Figure 96: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =0 v_m 2 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	0	2	5	0.05	2.1e-4	0.18059





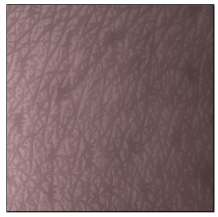
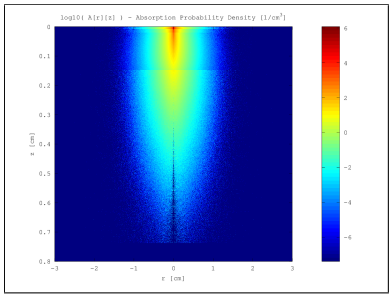
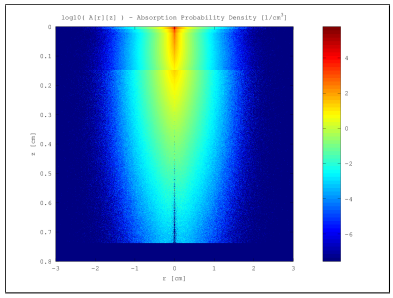
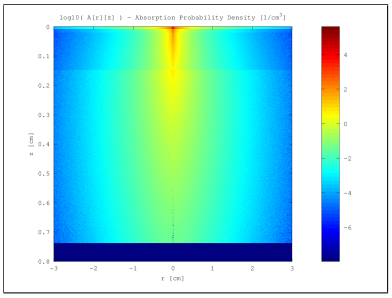


Figure 97: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

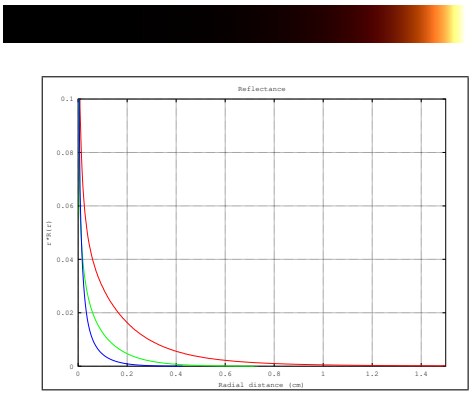


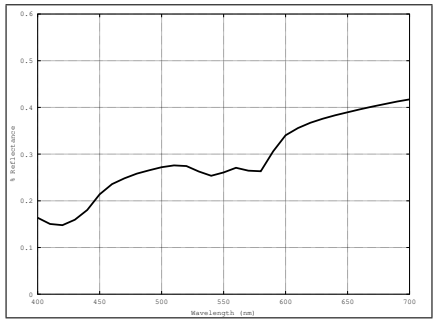




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	23.877	80.404	11.913	57.559	8.3587	50.025
Papillary-dermis	0.012592	3.2353	54.81	1.8888	36.388	0.44328	30.688
Reticular-dermis	0.12732	1.6022	57.191	0.92727	34.723	0.25118	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 98: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ_s') applying our skin aging model.



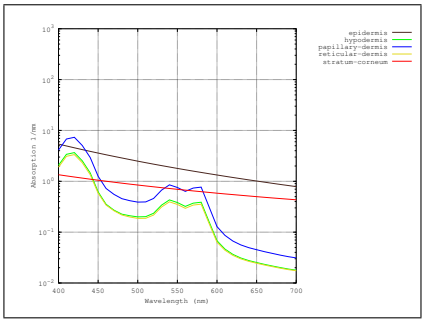


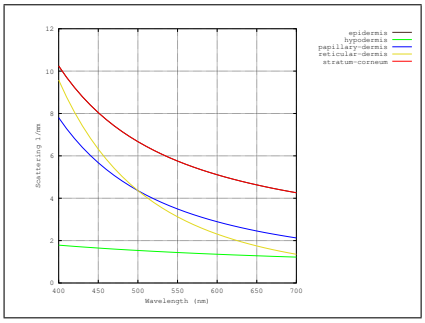
Fitting	R	G	B
w_i	(637.605, 42.171, 6.658, 1.464, 0.350, 0.053)	(373.291, 32.284, 5.035, 1.327, 0.336, 0.059)	(449.440, 40.767, 7.557, 2.085, 0.427, 0.060)
v_i	(0.587, 3.154, 26.792, 205.230, 1541.957, 10403.274)	(0.541, 2.415, 16.901, 99.866, 588.289, 3318.335)	(0.500, 2.073, 10.764, 47.624, 230.837, 1258.333)
RMS,AMAX	9.05e-11, 3e-03f	1.36e-11, 7e-04f	6.07e-12, 5e-04f

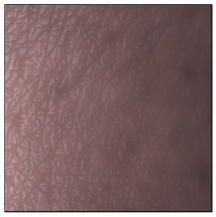
Figure 99: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =1 v_m 2 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	1	2	5	0.05	2.1e-4	0.069549







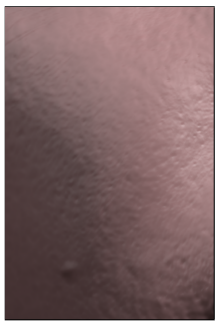
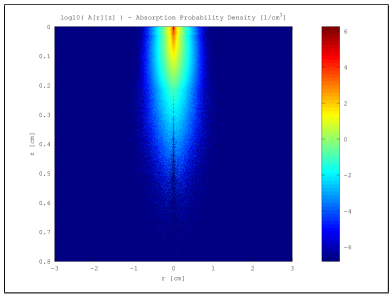
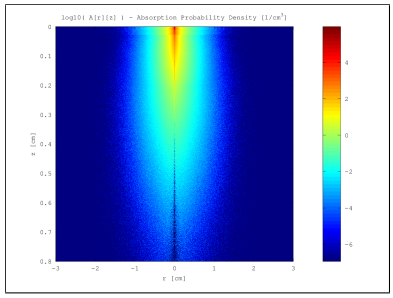
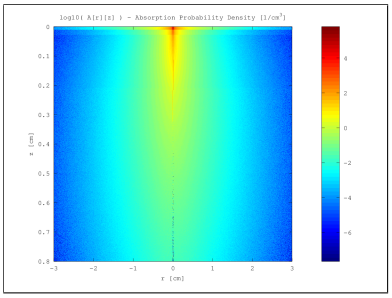


Figure 100: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

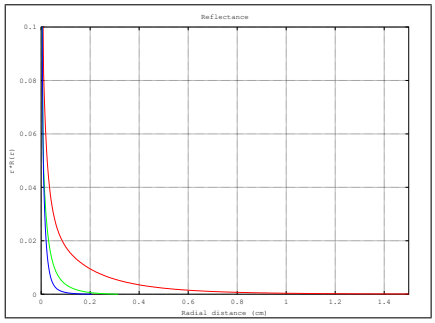


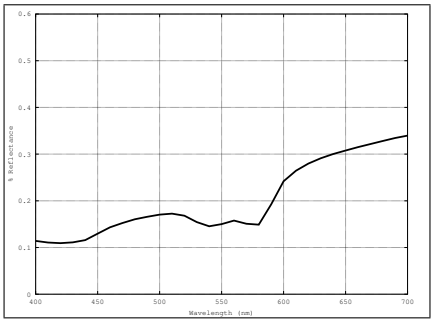




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	35.899	80.404	17.92	57.559	12.569	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 101: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



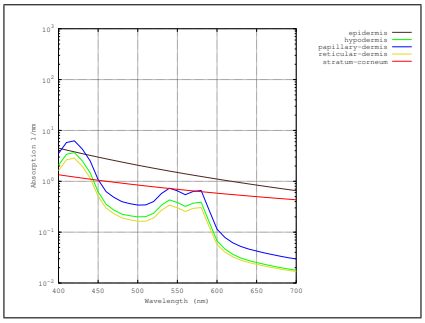


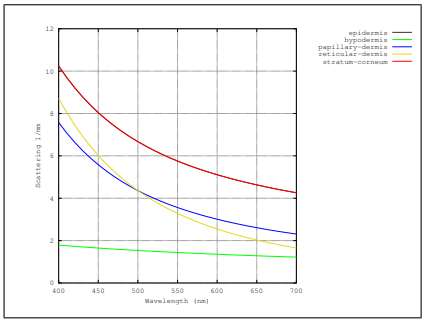
Fitting	R	G	B
w_i	(655.361, 66.021, 6.764, 1.366, 0.238, 0.033)	(383.579, 40.978, 4.818, 1.484, 0.354, 0.054)	(454.860, 39.998, 6.417, 2.033, 0.397, 0.037)
v_i	(0.536, 2.892, 24.488, 167.168, 1351.068, 10627.503)	(0.505, 2.455, 13.649, 55.505, 231.363, 1130.986)	(0.489, 2.238, 9.112, 29.601, 102.071, 485.609)
RMS,AMAX	3.11e-12, 6e-04f	3.22e-15, 1e-05f	3.82e-15, 1e-05f

Figure 102: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =1 v_m 2 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	1	2	5	0.05	2.1e-4	0.099683





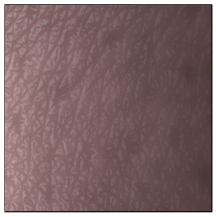
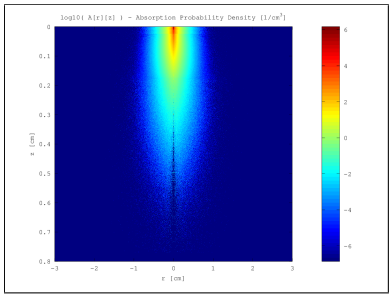
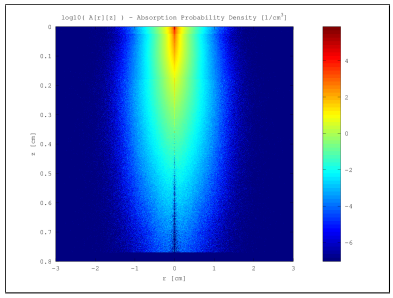
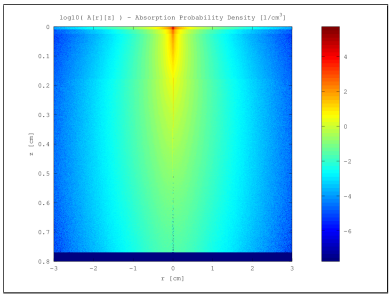


Figure 103: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

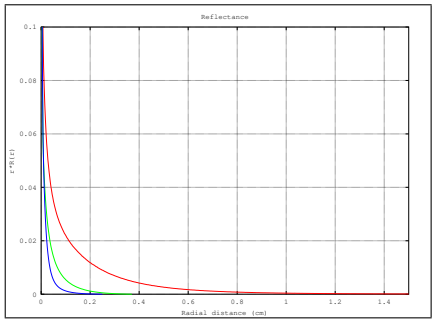


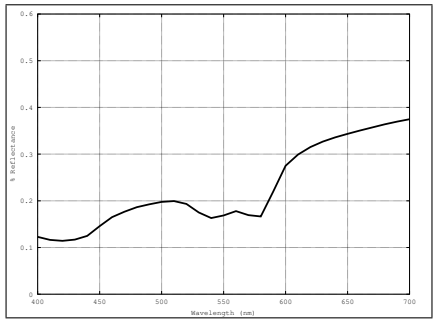




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	29.888	80.404	14.916	57.559	10.464	50.025
Papillary-dermis	0.015295	10.805	55.809	6.4944	35.614	0.78613	29.197
Reticular-dermis	0.15465	5.0424	60.173	3.0206	32.821	0.40559	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 104: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



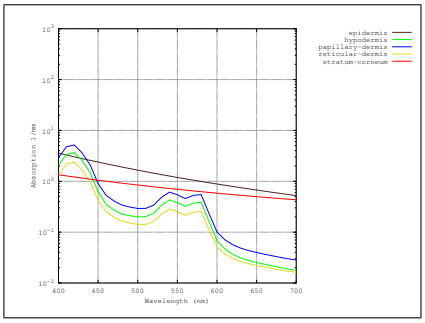


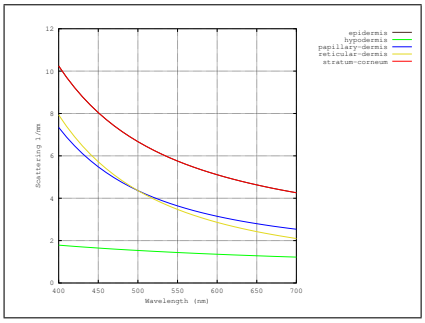
Fitting	R	G	B
w_i	(659.813, 68.411, 7.390, 1.521, 0.300, 0.044)	(377.513, 36.996, 6.161, 4.633, 0.997, 0.131)	(469.625, 49.799, 7.566, 2.288, 0.433, 0.046)
v_i	(0.525, 2.558, 22.528, 165.086, 1320.646, 9875.285)	(0.527, 2.573, 0.008, 20.004, 127.433, 929.682)	(0.458, 1.912, 8.661, 31.368, 121.128, 626.595)
RMS,AMAX	1.39e-11, 1e-03f	1.12e-11, 6e-04f	6.01e-13, 2e-04f

Figure 105: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =1 v_m 2 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	1	2	5	0.05	2.1e-4	0.14797





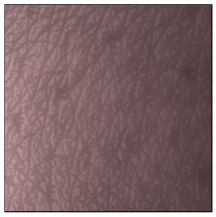
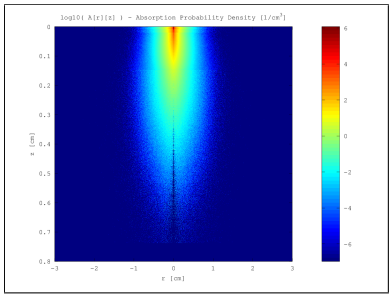
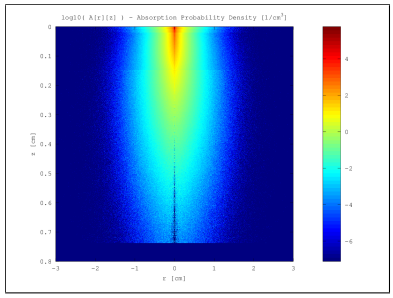
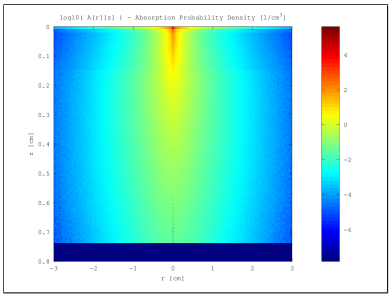


Figure 106: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

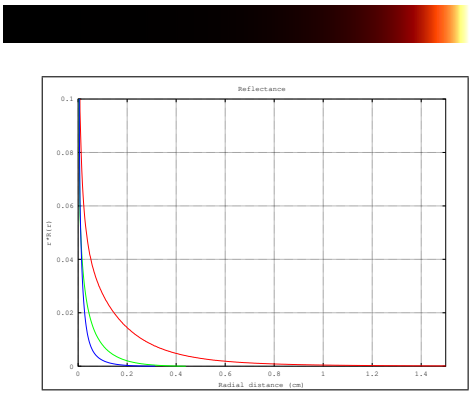


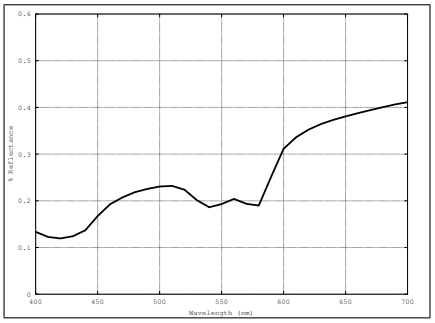




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	23.877	80.404	11.913	57.559	8.3587	50.025
Papillary-dermis	0.012592	9.0584	54.81	5.4315	36.388	0.70701	30.688
Reticular-dermis	0.12732	4.2485	57.191	2.5375	34.723	0.36996	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 107: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



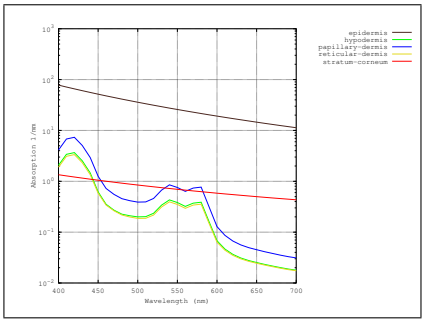


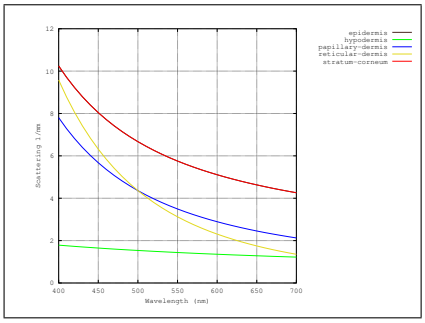
Fitting	R	G	B
w_i	(640.414, 45.262, 6.884, 1.505, 0.347, 0.051)	(383.281, 43.436, 5.619, 1.620, 0.417, 0.070)	(460.250, 49.238, 7.982, 2.339, 0.452, 0.053)
v_i	(0.577, 2.961, 24.699, 186.005, 1404.126, 9659.555)	(0.495, 1.971, 12.899, 65.445, 331.497, 1754.050)	(0.470, 1.817, 8.928, 35.386, 151.489, 822.531)
RMS,AMAX	4.95e-11, 2e-03f	5.51e-11, 1e-03f	2.28e-12, 3e-04f

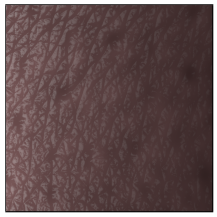
Figure 108: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =0 v_m 30 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	0	30	5	0.05	2.1e-4	0.081579







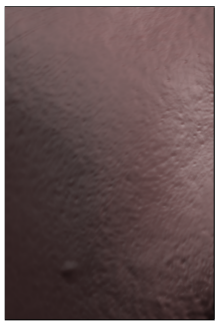
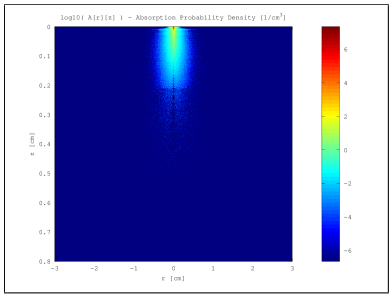
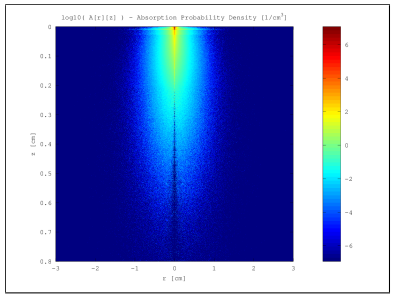
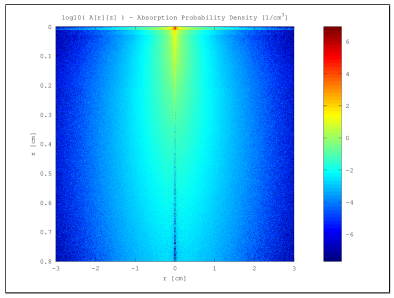


Figure 109: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

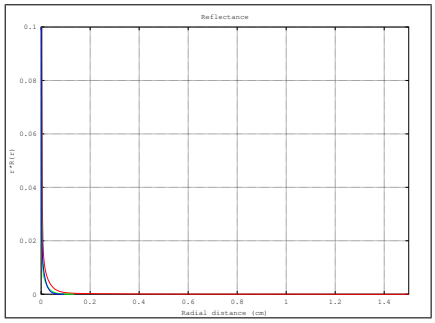


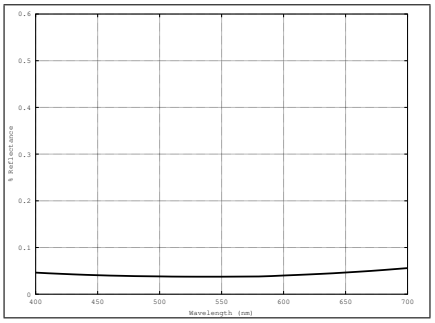




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	516.8	80.404	258.23	57.559	180.97	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 110: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



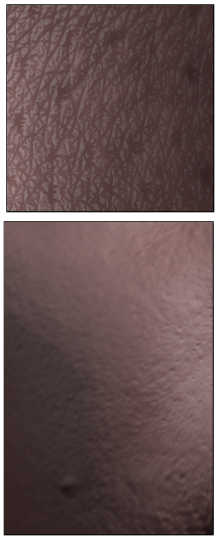


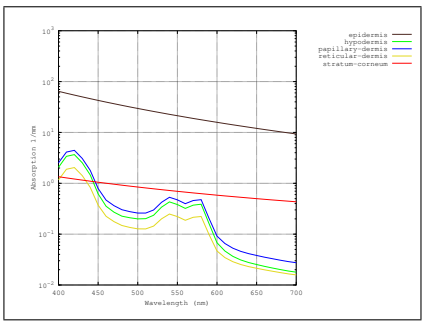
Fitting	R	G	B
w_i	(811.209, 54.633, 6.704, 1.138, 0.223, 0.007)	(322.876, 240.376, 29.632, 2.713, 0.548, 0.116)	(353.798, 351.586, 70.910, 3.735, 1.003, 0.207)
v_i	(0.355, 1.131, 3.858, 22.247, 134.216, 1927.654)	(0.269, 0.345, 0.920, 3.978, 23.112, 114.380)	(0.238, 0.270, 0.525, 3.376, 16.326, 65.515)
RMS,AMAX	3.34e-08, 4e-02f	4.23e-08, 3e-02f	3.90e-11, 8e-04f

Figure 111: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =0 v_m 30 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	0	30	5	0.05	2.1e-4	0.12802





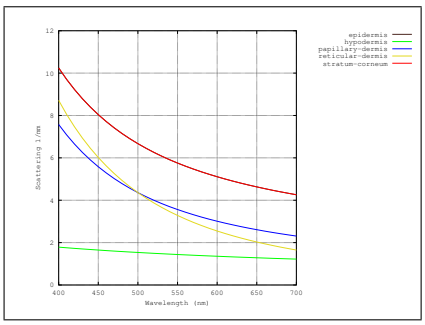
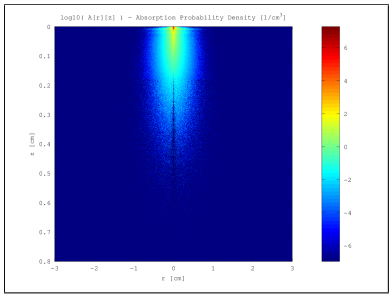
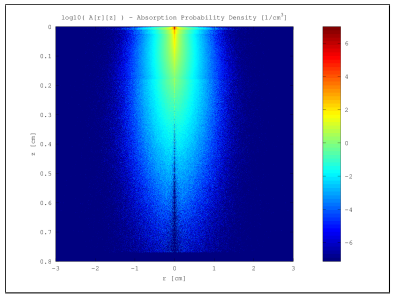
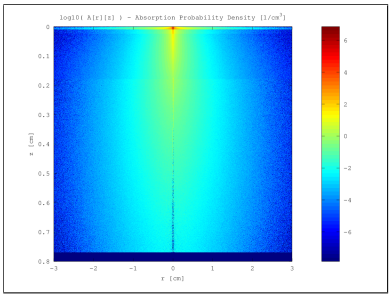


Figure 112: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

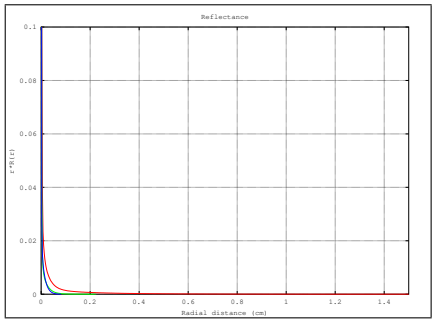


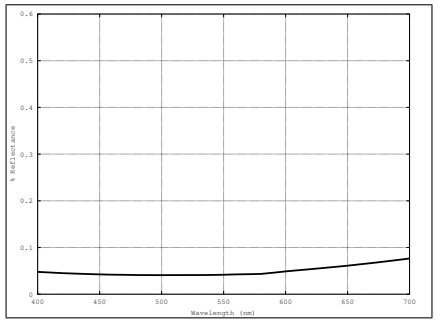




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	426.63	80.404	213.17	57.559	149.4	50.025
Papillary-dermis	0.015295	7.8938	55.809	4.723	35.614	0.65427	29.197
Reticular-dermis	0.15465	3.7192	60.173	2.2155	32.821	0.34621	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 113: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



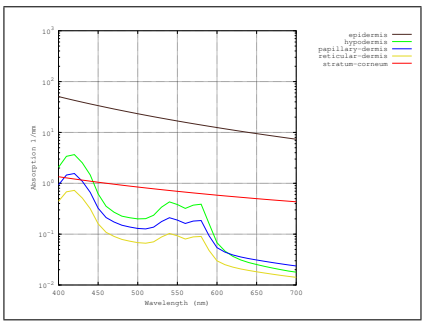


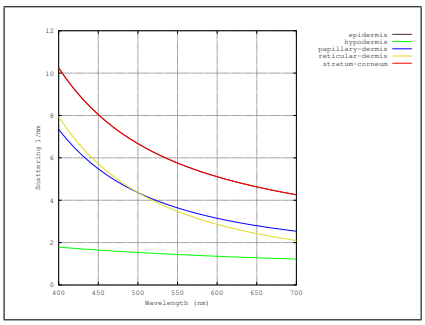
Fitting	R	G	B
w_i	(711.661, 33.281, 2.722, 0.526, 0.067, 0.006)	(138.727, 68.771, 68.373, 66.620, 46.149, -0.118)	(106.032, 92.317, 83.581, 73.262, 57.043, 27.562)
v_i	(0.428, 1.833, 11.518, 69.376, 435.477, 5560.863)	(0.381, 0.516, 0.758, 0.358, 0.557, 0.603)	(0.434, 0.337, 0.476, 0.426, 0.694, 0.097)
RMS,AMAX	1.65e-07, 1e-01f	1.79e-04, 2e+00f	2.33e-05, 7e-01f

Figure 114: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =0 v_m 30 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	0	30	5	0.05	2.1e-4	0.18059





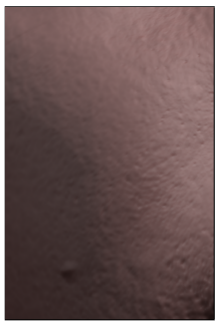
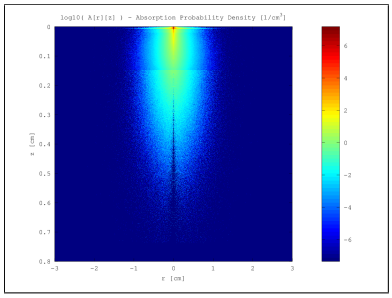
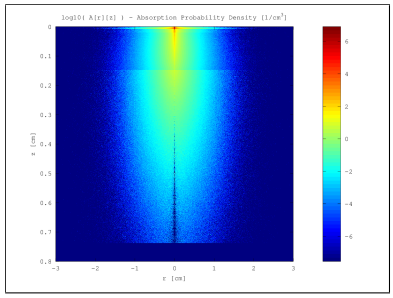
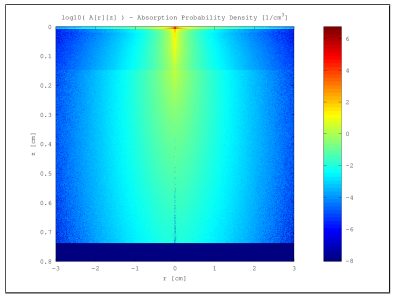


Figure 115: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

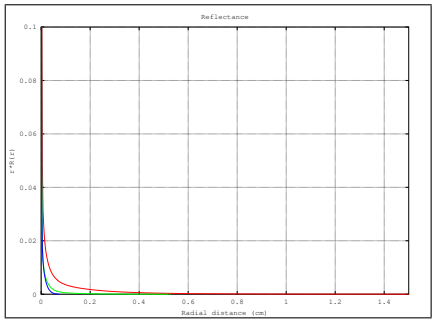


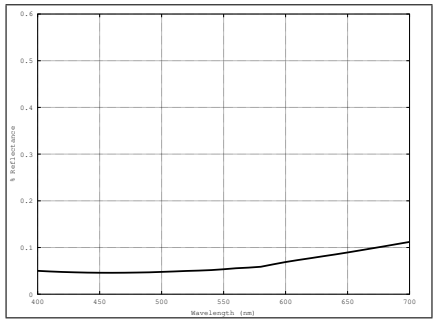




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	336.46	80.404	168.12	57.559	117.82	50.025
Papillary-dermis	0.012592	3.2353	54.81	1.8888	36.388	0.44328	30.688
Reticular-dermis	0.12732	1.6022	57.191	0.92727	34.723	0.25118	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 116: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.

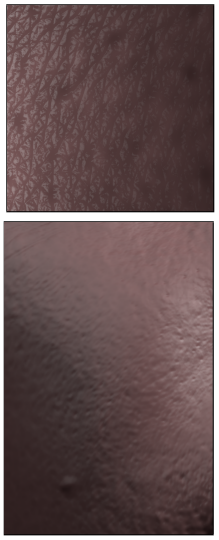




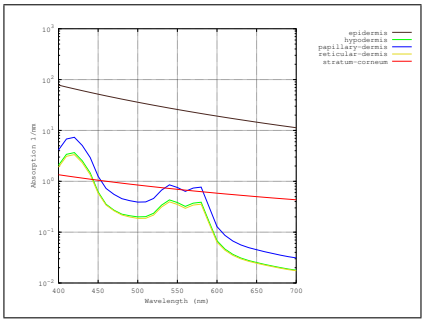
Fitting	R	G	B
w_i	(664.669, 25.513, 3.053, 0.578, 0.080, 0.011)	(470.366, 66.142, 5.864, 0.995, 0.196, 0.011)	(107.131, 98.322, 86.770, 66.430, 66.302, -2.454)
v_i	(0.481, 2.278, 15.193, 99.543, 780.606, 6871.338)	(0.318, 0.776, 3.168, 18.584, 107.440, 1140.105)	(0.388, 0.469, 0.414, 0.715, 0.399, 0.198)
RMS,AMAX	1.16e-12, 3e-04f	5.86e-08, 3e-02f	1.17e-05, 5e-01f

Figure 117: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =1 v_m 30 v_{Hb} 5



Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	1	30	5	0.05	2.1e-4	0.069549



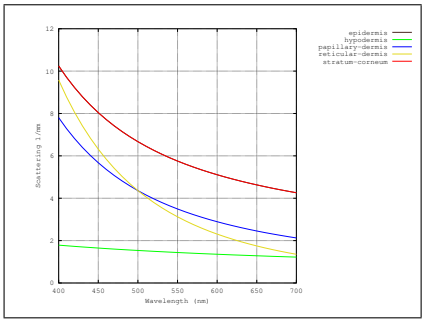
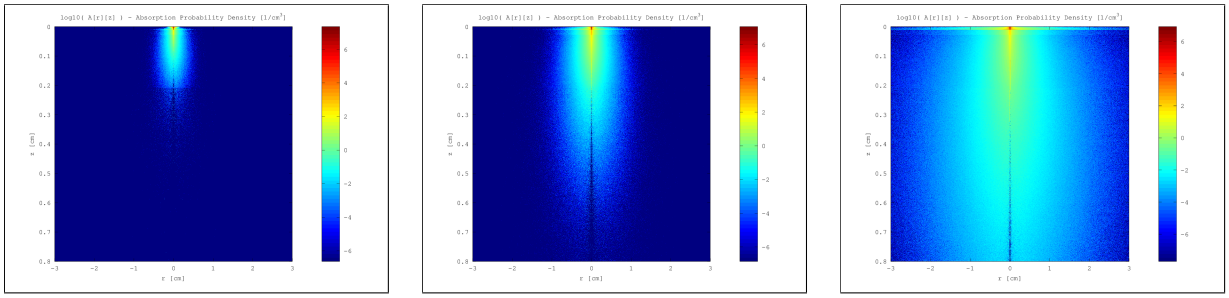
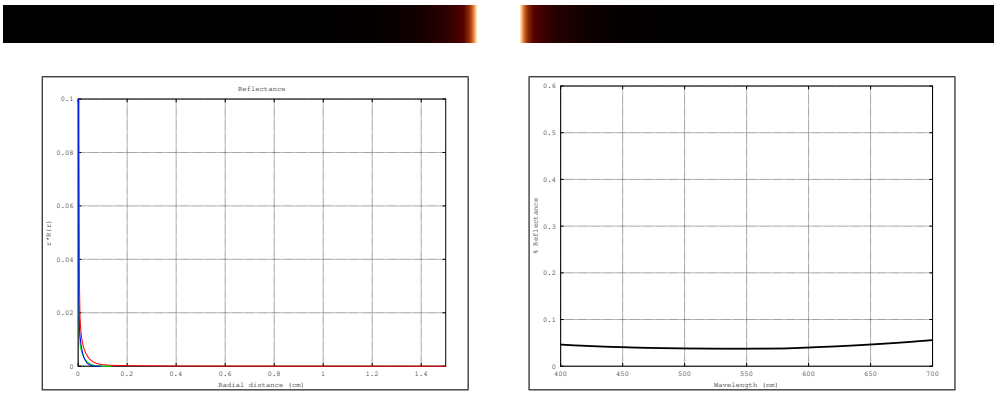


Figure 118: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.



Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	516.8	80.404	258.23	57.559	180.97	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 119: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.

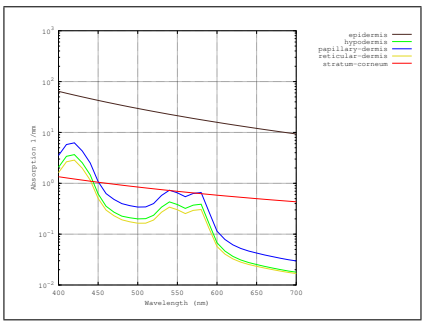


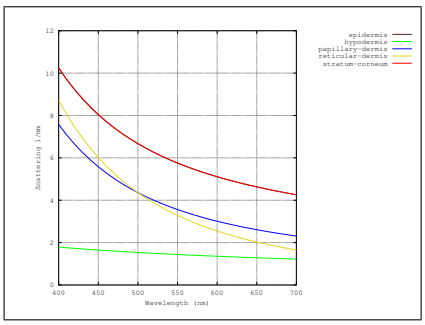
Fitting	R	G	B
w_i	(874.760, 252.996, 50.239, 3.285, 0.617, 0.070)	(774.644, 73.068, 43.897, 3.155, 0.573, 0.122)	(182.843, 81.506, 73.089, 68.004, 55.998, 38.059)
v_i	(0.255, 0.431, 1.362, 7.499, 48.444, 329.030)	(0.222, 0.364, 0.808, 3.645, 22.053, 111.562)	(0.256, 0.463, 0.479, 0.487, 0.664, 0.047)
RMS,AMAX	1.60e-07, 1e-01f	2.67e-08, 2e-02f	2.91e-07, 7e-02f

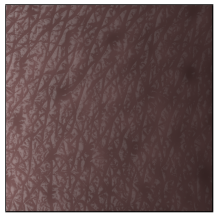
Figure 120: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =1 v_m 30 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	1	30	5	0.05	2.1e-4	0.099683







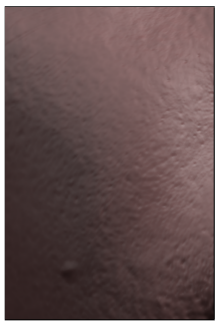
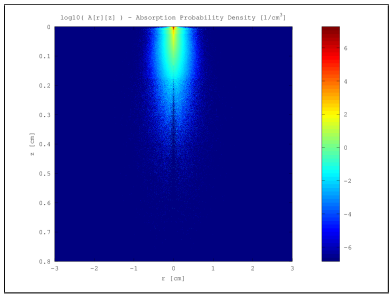
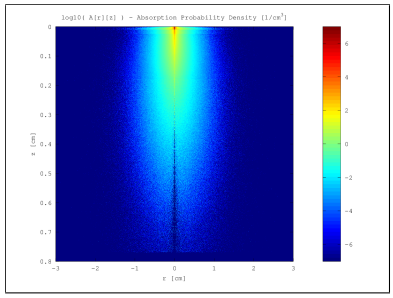
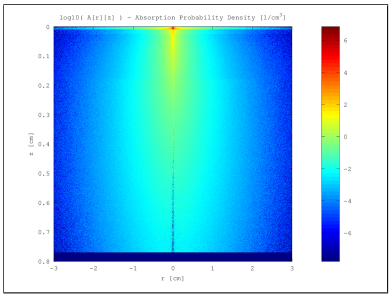


Figure 121: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

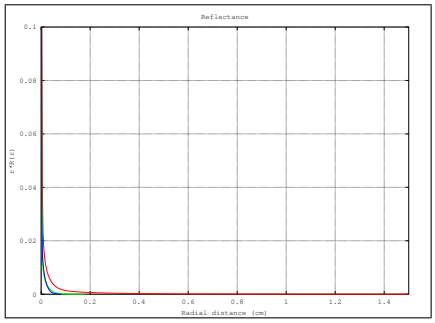


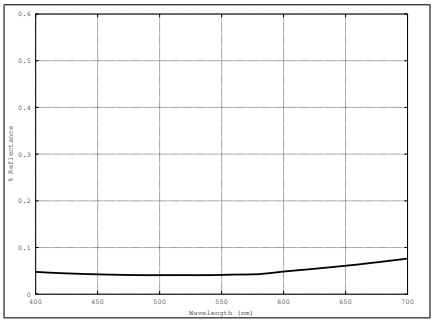




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	426.63	80.404	213.17	57.559	149.4	50.025
Papillary-dermis	0.015295	10.805	55.809	6.4944	35.614	0.78613	29.197
Reticular-dermis	0.15465	5.0424	60.173	3.0206	32.821	0.40559	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 122: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



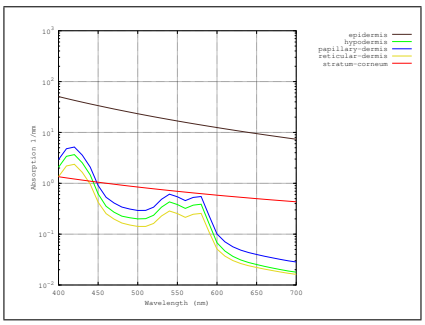


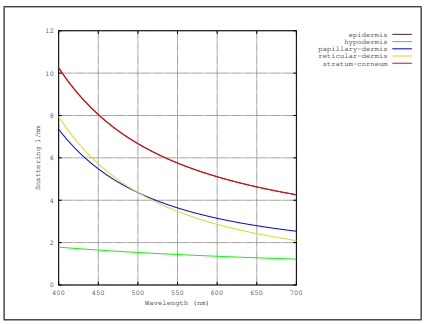
Fitting	R	G	B
w_i	(693.130, 28.057, 2.535, 0.512, 0.066, 0.006)	(95.134, 85.444, 77.972, 56.128, 53.017, -0.005)	(114.193, 108.333, 74.148, 66.820, 55.991, -1.598)
v_i	(0.444, 1.996, 12.077, 69.977, 428.852, 5443.620)	(0.405, 0.536, 0.287, 0.607, 0.698, 0.100)	(0.427, 0.379, 0.674, 0.459, 0.325, 0.036)
RMS,AMAX	3.06e-09, 1e-02f	2.63e-03, 7e+00f	3.57e-05, 8e-01f

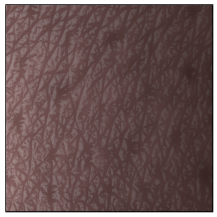
Figure 123: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =1 v_m 30 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	1	30	5	0.05	2.1e-4	0.14797







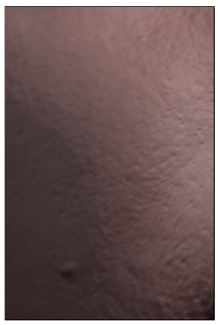
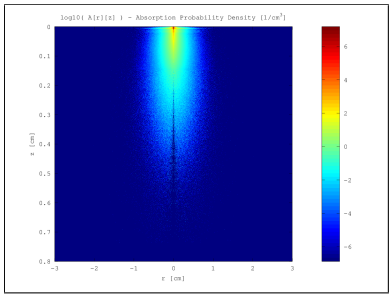
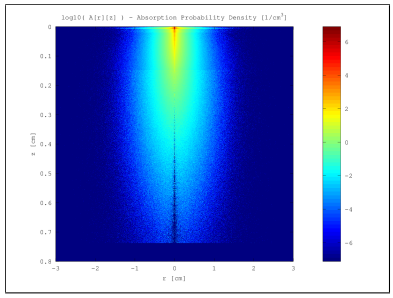
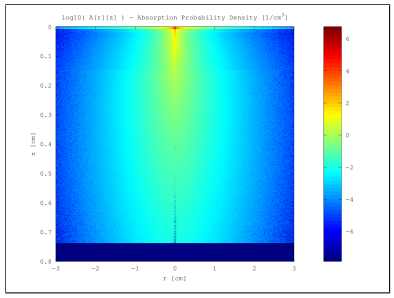


Figure 124: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

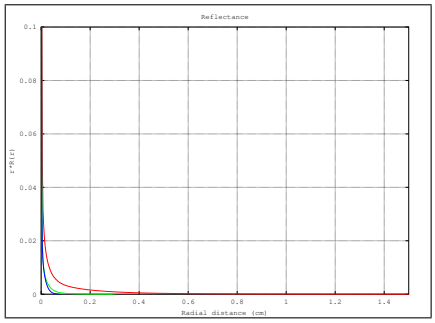


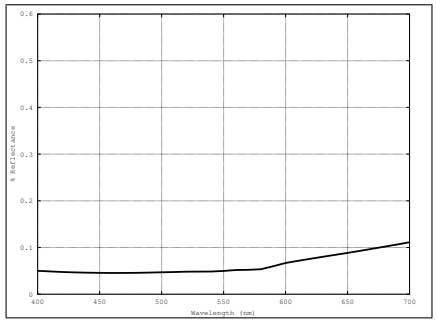




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	336.46	80.404	168.12	57.559	117.82	50.025
Papillary-dermis	0.012592	9.0584	54.81	5.4315	36.388	0.70701	30.688
Reticular-dermis	0.12732	4.2485	57.191	2.5375	34.723	0.36996	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 125: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



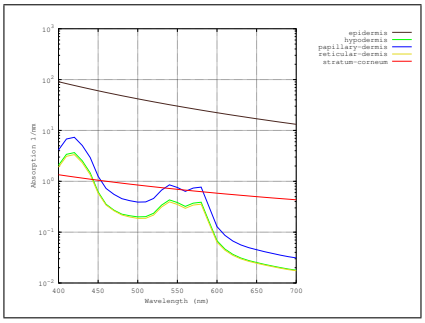


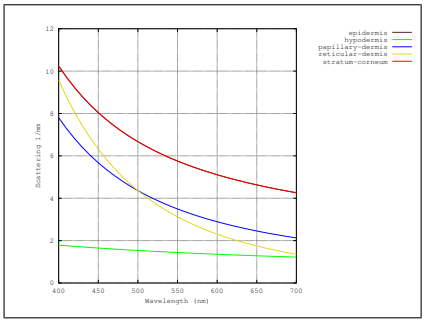
Fitting	R	G	B
w_i	(664.232, 24.681, 3.052, 0.585, 0.081, 0.010)	(374.019, 176.710, 15.124, 1.693, 0.360, 0.033)	(205.526, 141.292, 85.742, 63.041, 43.058, 0.168)
v_i	(0.483, 2.312, 14.921, 95.949, 721.742, 6457.053)	(0.273, 0.503, 1.730, 9.973, 57.872, 371.709)	(0.310, 0.515, 0.280, 0.233, 0.959, 0.535)
RMS,AMAX	1.06e-12, 3e-04f	5.41e-08, 3e-02f	7.49e-06, 4e-01f

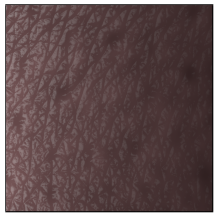
Figure 126: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =0 v_m 35 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	0	35	5	0.05	2.1e-4	0.081579







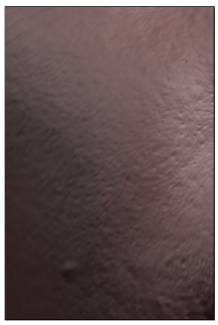
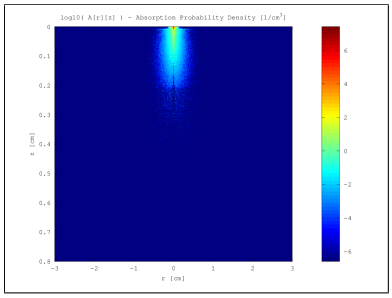
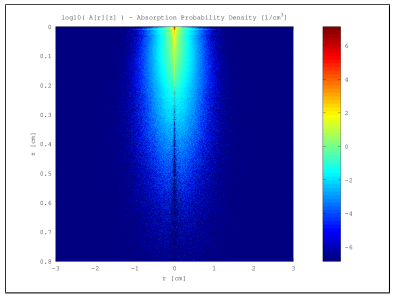
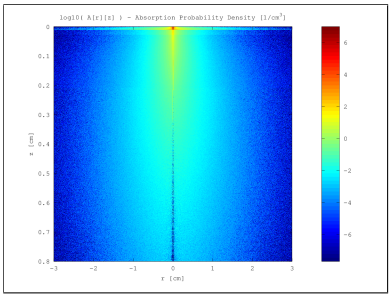


Figure 127: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

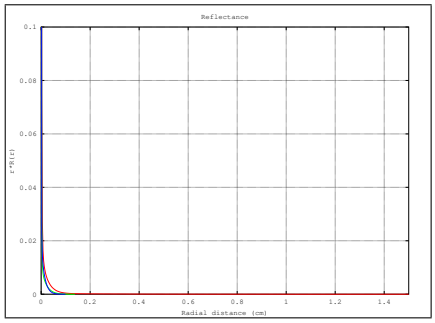


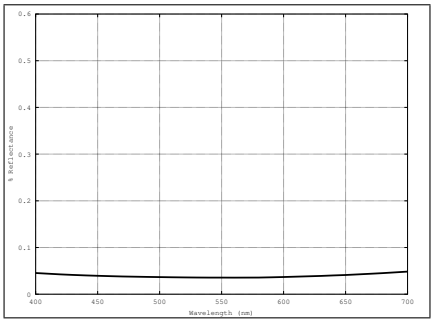




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	602.68	80.404	301.14	57.559	211.04	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 128: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



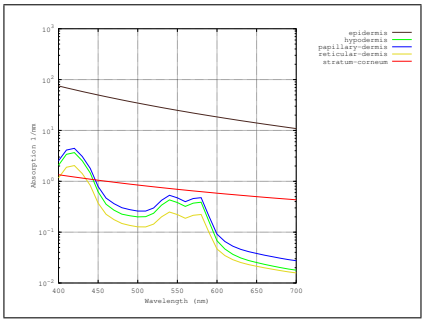


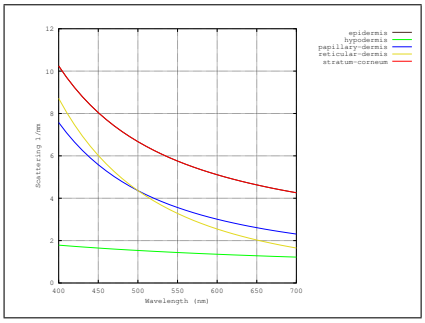
Fitting	R	G	B
w_i	(614.719, 345.751, 15.243, 1.503, 0.350, 0.031)	(101.827, 93.375, 85.125, 76.889, 53.210, 30.620)	(82.678, 72.983, 65.308, 63.844, 56.385, -0.359)
v_i	(0.261, 0.508, 2.282, 13.574, 76.935, 462.291)	(0.309, 0.499, 0.444, 0.445, 0.048, 0.752)	(0.447, 0.496, 0.474, 0.670, 0.445, 0.229)
RMS,AMAX	1.77e-09, 1e-02f	1.30e-08, 1e-02f	1.57e-04, 2e+00f

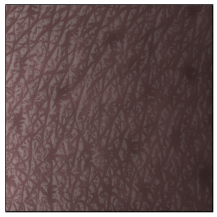
Figure 129: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =0 v_m 35 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	0	35	5	0.05	2.1e-4	0.12802







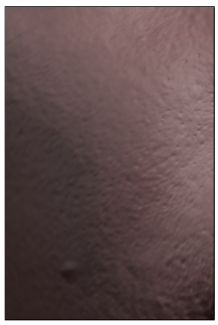
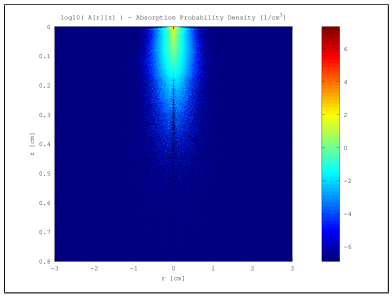
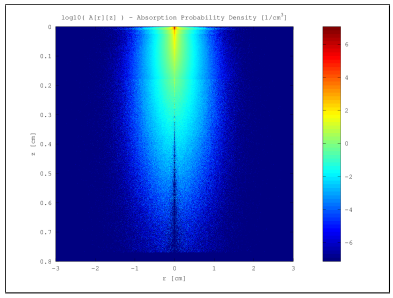
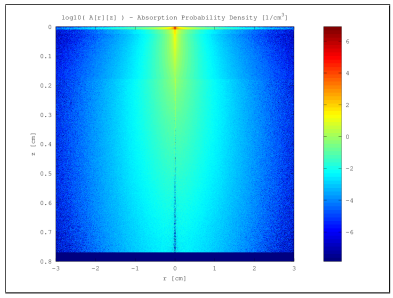


Figure 130: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

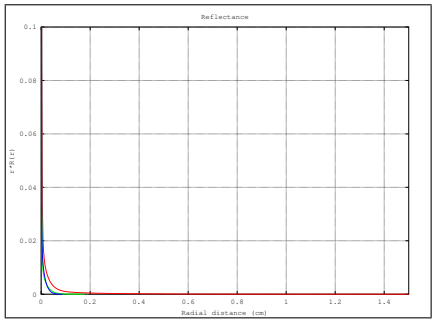


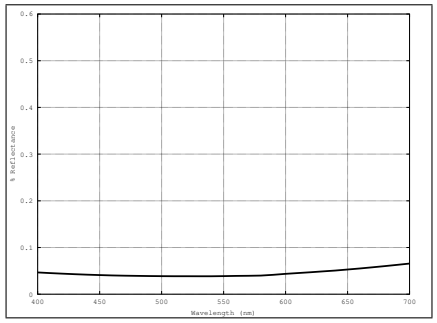




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	497.48	80.404	248.58	57.559	174.2	50.025
Papillary-dermis	0.015295	7.8938	55.809	4.723	35.614	0.65427	29.197
Reticular-dermis	0.15465	3.7192	60.173	2.2155	32.821	0.34621	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 131: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



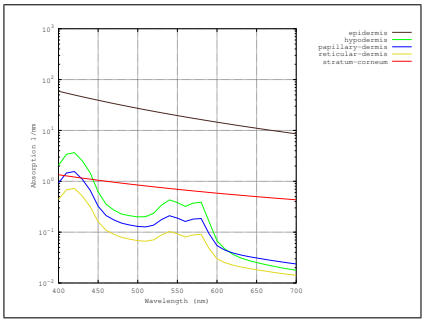


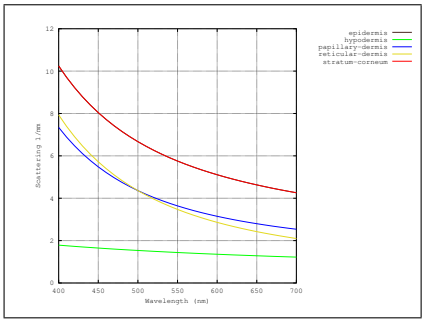
Fitting	R	G	B
w_i	(807.714, 84.077, 10.601, 1.387, 0.232, 0.009)	(100.335, 80.075, 65.886, 60.457, 50.634, -7.482)	(380.393, 264.588, 4.019, 3.973, 1.085, 0.239)
v_i	(0.338, 0.881, 3.169, 22.017, 153.221, 2718.983)	(0.497, 0.612, 0.380, 0.495, 0.510, 0.526)	(0.249, 0.398, 0.006, 3.117, 14.656, 61.029)
RMS,AMAX	2.67e-07, 1e-01f	1.17e-07, 4e-02f	9.22e-10, 4e-03f

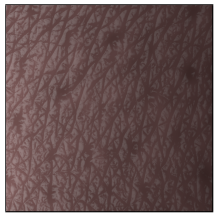
Figure 132: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =0 v_m 35 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	0	35	5	0.05	2.1e-4	0.18059







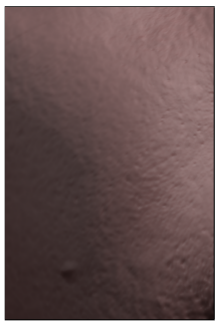
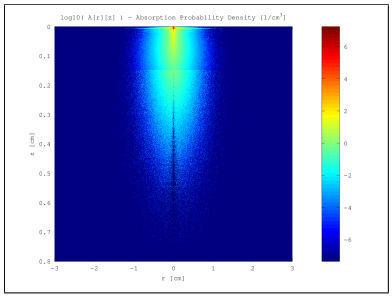
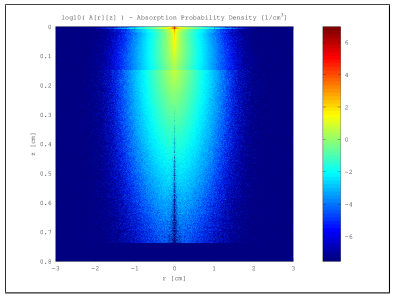
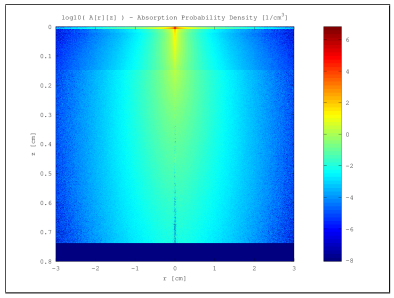


Figure 133: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

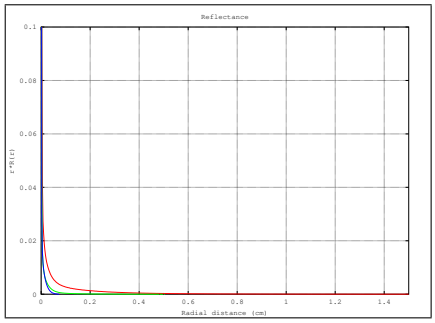


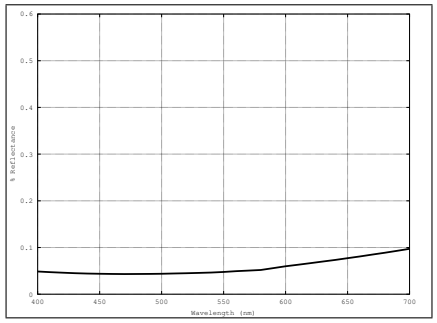




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	392.28	80.404	196.01	57.559	137.37	50.025
Papillary-dermis	0.012592	3.2353	54.81	1.8888	36.388	0.44328	30.688
Reticular-dermis	0.12732	1.6022	57.191	0.92727	34.723	0.25118	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 134: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



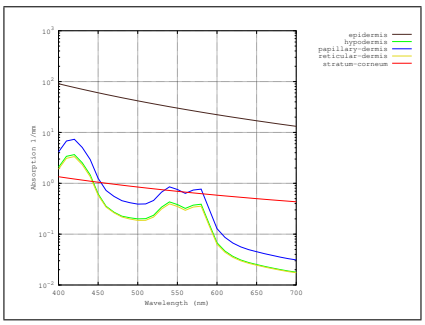


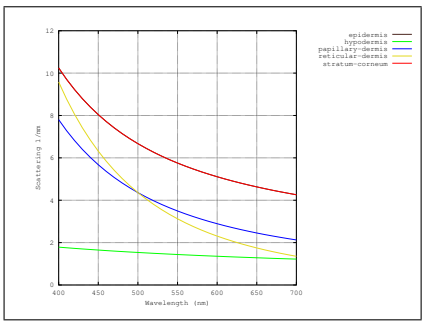
Fitting	R	G	B
w_i	(670.833, 22.313, 2.698, 0.530, 0.069, 0.009)	(386.294, 140.576, 7.033, 1.065, 0.233, 0.013)	(294.064, 247.846, 117.874, 4.666, 1.120, 0.253)
v_i	(0.471, 2.256, 14.452, 92.012, 687.622, 6427.064)	(0.292, 0.562, 2.501, 14.440, 83.394, 759.873)	(0.280, 0.274, 0.494, 2.997, 14.355, 58.710)
RMS,AMAX	9.44e-13, 2e-04f	1.36e-08, 2e-02f	2.06e-12, 2e-04f

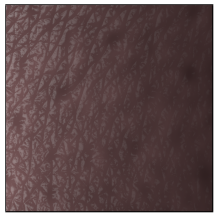
Figure 135: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =1 v_m 35 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	1	35	5	0.05	2.1e-4	0.069549







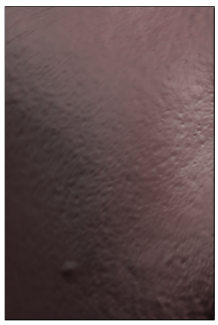
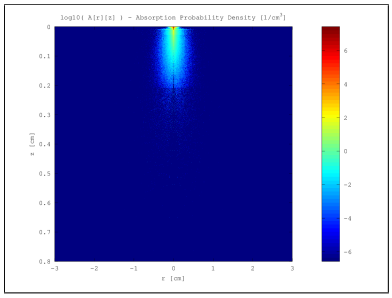
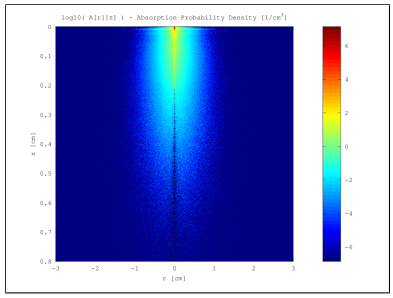
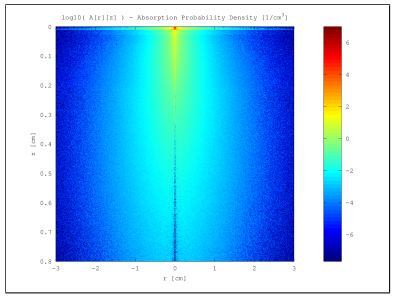


Figure 136: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

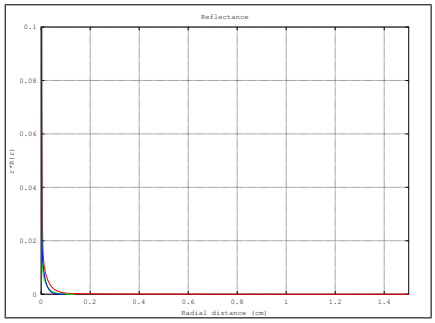


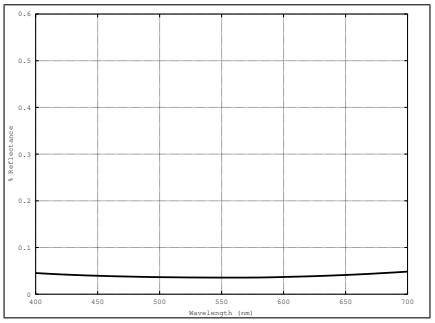




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	602.68	80.404	301.14	57.559	211.04	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 137: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



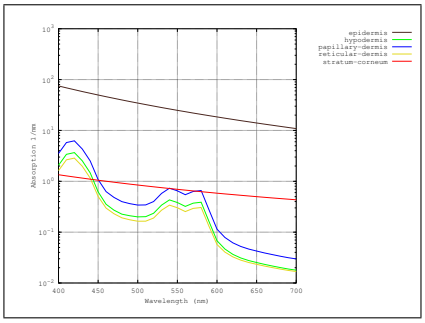


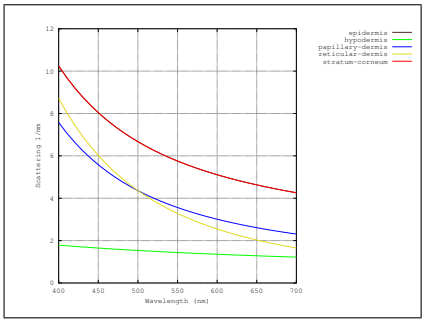
Fitting	R	G	B
w_i	(693.263, 337.386, 32.737, 2.424, 0.508, 0.061)	(258.931, 252.954, 50.848, 3.124, 0.568, 0.123)	(108.135, 93.737, 79.516, 78.997, 66.662, 18.696)
v_i	(0.257, 0.441, 1.504, 8.555, 52.714, 307.189)	(0.326, 0.270, 0.660, 3.437, 21.425, 109.764)	(0.364, 0.437, 0.419, 0.271, 0.657, 0.013)
RMS,AMAX	3.46e-08, 4e-02f	2.73e-10, 2e-03f	1.69e-04, 2e+00f

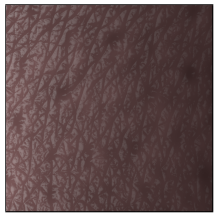
Figure 138: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =1 v_m 35 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	1	35	5	0.05	2.1e-4	0.099683







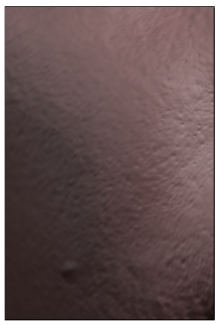
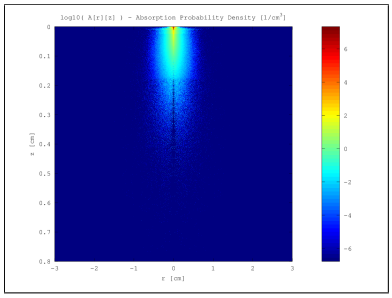
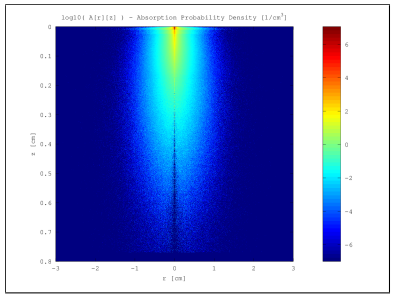
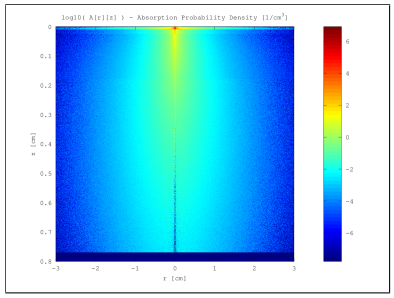


Figure 139: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

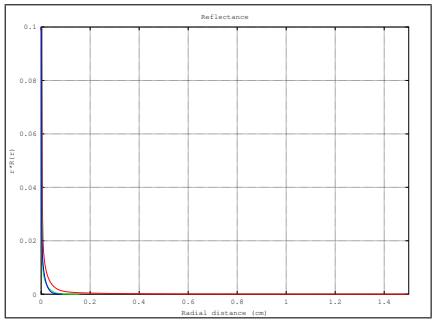


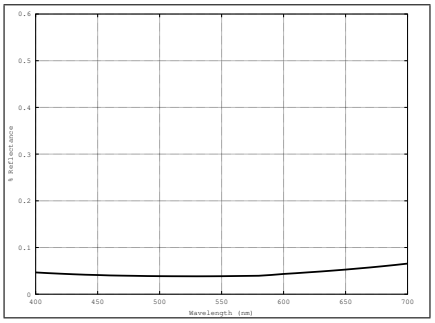




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	497.48	80.404	248.58	57.559	174.2	50.025
Papillary-dermis	0.015295	10.805	55.809	6.4944	35.614	0.78613	29.197
Reticular-dermis	0.15465	5.0424	60.173	3.0206	32.821	0.40559	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 140: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



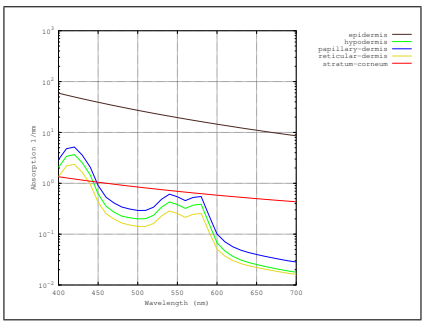


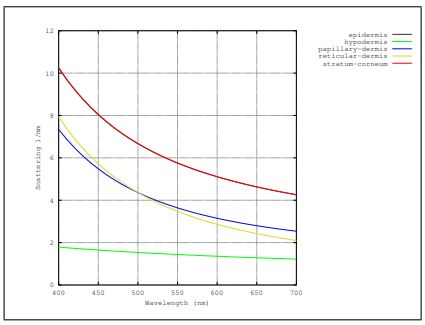
Fitting	R	G	B
w_i	(721.430, 29.620, 2.500, 0.547, 0.081, 0.005)	(414.118, 226.524, 34.355, 2.758, 0.559, 0.114)	(218.127, 216.193, 102.296, 3.888, -1.791, -62.307)
v_i	(0.417, 1.747, 10.085, 56.041, 311.260, 4649.477)	(0.244, 0.339, 0.905, 4.082, 23.726, 119.759)	(0.335, 0.339, 0.514, 14.754, 14.746, 0.243)
RMS,AMAX	1.00e-09, 8e-03f	4.51e-08, 3e-02f	6.33e-09, 1e-02f

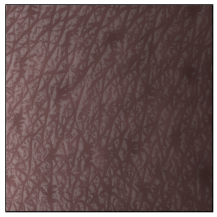
Figure 141: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =1 v_m 35 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	1	35	5	0.05	2.1e-4	0.14797







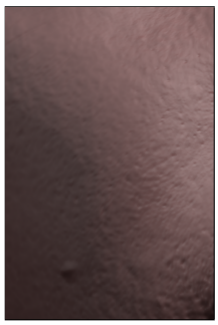
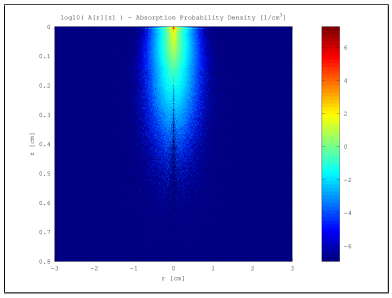
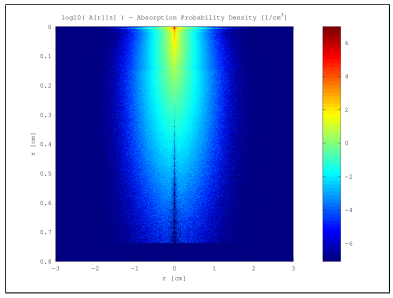
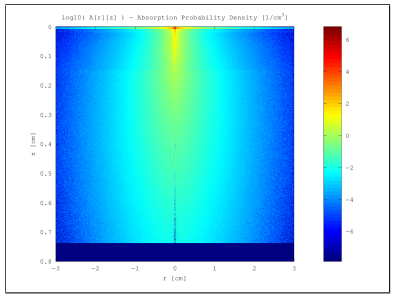


Figure 142: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

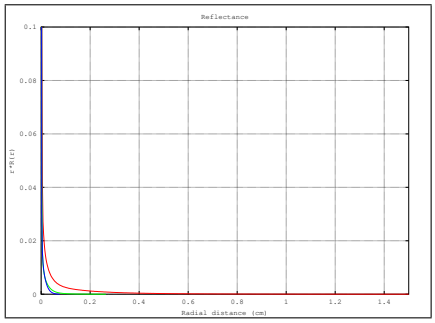


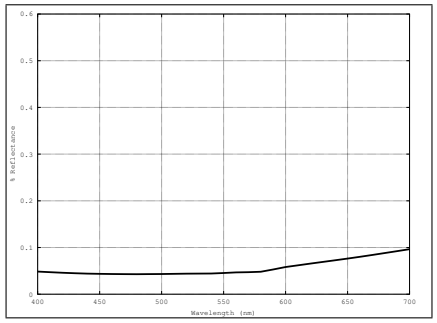




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	392.28	80.404	196.01	57.559	137.37	50.025
Papillary-dermis	0.012592	9.0584	54.81	5.4315	36.388	0.70701	30.688
Reticular-dermis	0.12732	4.2485	57.191	2.5375	34.723	0.36996	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 143: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



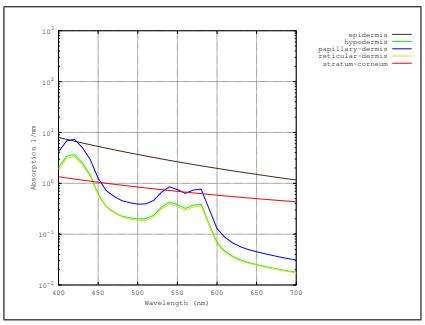


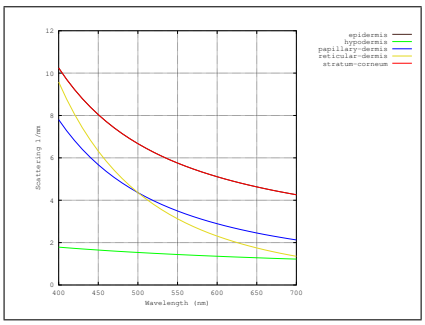
Fitting	R	G	B
w_i	(669.765, 22.574, 2.681, 0.528, 0.070, 0.009)	(412.415, 114.190, 5.092, 0.741, 0.111, -1.126)	(111.731, 105.095, 101.525, 73.333, 50.163, -1.134)
v_i	(0.471, 2.244, 14.406, 89.772, 643.237, 6056.763)	(0.301, 0.619, 3.464, 24.305, 154.042, 0.015)	(0.317, 0.379, 0.448, 0.521, 0.740, 0.618)
RMS,AMAX	1.08e-12, 3e-04f	3.12e-08, 2e-02f	9.48e-06, 4e-01f

Figure 144: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =0 v_m 3 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	0	3	5	0.05	2.1e-4	0.081579





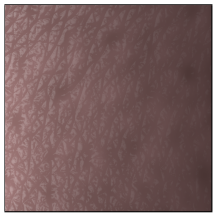
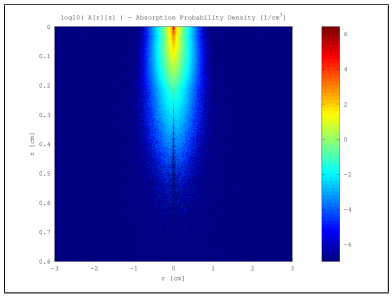
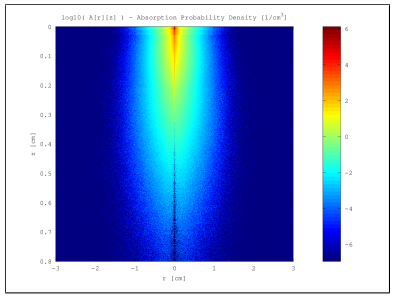
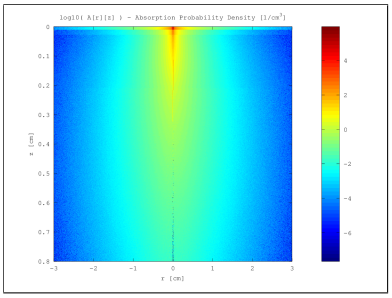


Figure 145: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

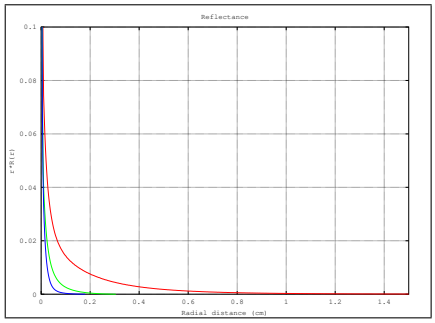


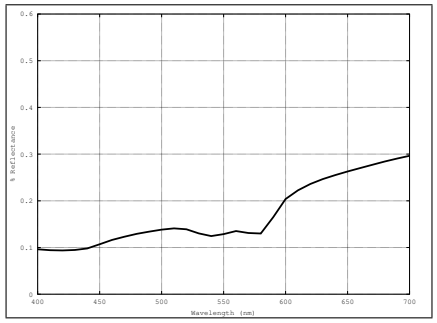




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	53.075	80.404	26.503	57.559	18.583	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 146: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



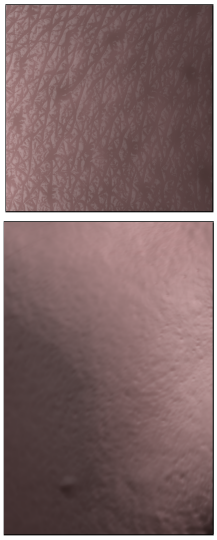


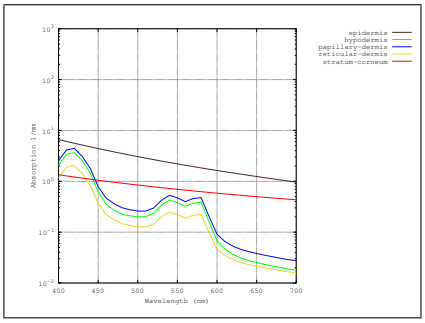
Fitting	R	G	B
w_i	(655.222, 62.771, 6.336, 1.232, 0.203, 0.028)	(386.458, 39.776, 4.479, 1.405, 0.335, 0.047)	(544.681, 60.261, 11.996, 3.673, 0.763, 0.058)
v_i	(0.532, 2.836, 23.206, 156.096, 1269.220, 10224.145)	(0.493, 2.329, 12.035, 45.939, 191.008, 1001.676)	(0.367, 1.336, 3.917, 14.357, 55.113, 287.212)
RMS,AMAX	1.69e-12, 4e-04f	1.58e-09, 7e-03f	2.28e-09, 9e-03f

Figure 147: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =0 v_m 3 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	0	3	5	0.05	2.1e-4	0.12802





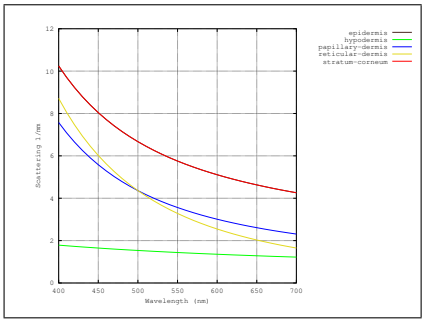
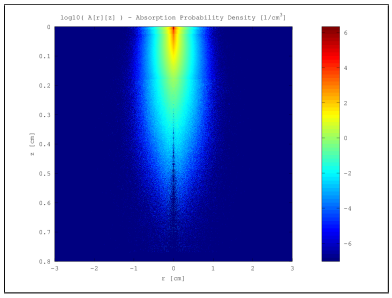
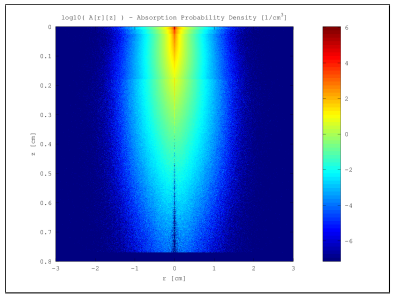
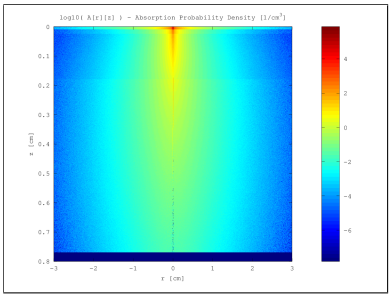


Figure 148: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

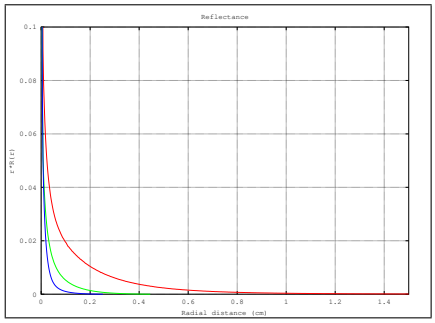


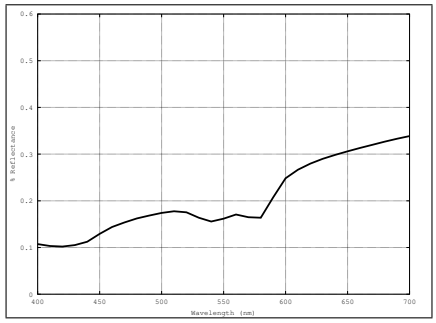




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	44.058	80.404	21.997	57.559	15.426	50.025
Papillary-dermis	0.015295	7.8938	55.809	4.723	35.614	0.65427	29.197
Reticular-dermis	0.15465	3.7192	60.173	2.2155	32.821	0.34621	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 149: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



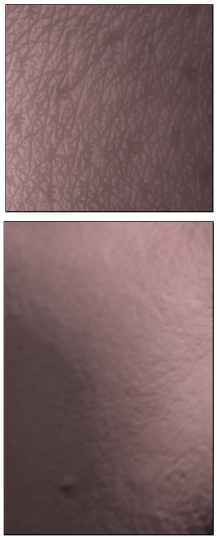


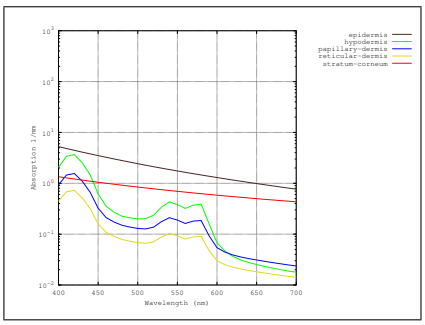
Fitting	R	G	B
w_i	(662.019, 66.557, 7.004, 1.416, 0.271, 0.039)	(400.253, 48.095, 5.129, 1.380, 0.306, 0.047)	(466.676, 43.158, 6.608, 1.868, 0.343, 0.037)
v_i	(0.519, 2.520, 21.847, 158.468, 1289.309, 9830.835)	(0.459, 2.012, 12.836, 62.280, 315.561, 1772.500)	(0.459, 1.914, 8.481, 30.783, 120.697, 646.293)
RMS,AMAX	1.04e-11, 1e-03f	4.21e-12, 4e-04f	1.10e-12, 2e-04f

Figure 150: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =0 v_m 3 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	0	3	5	0.05	2.1e-4	0.18059





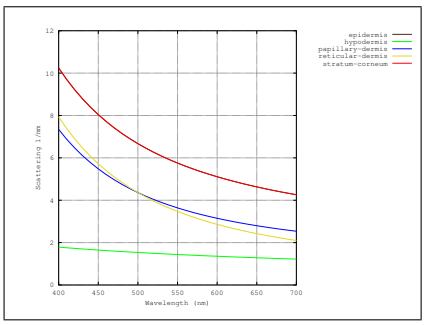
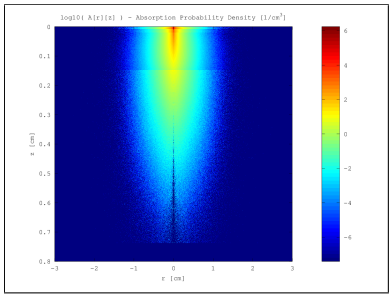
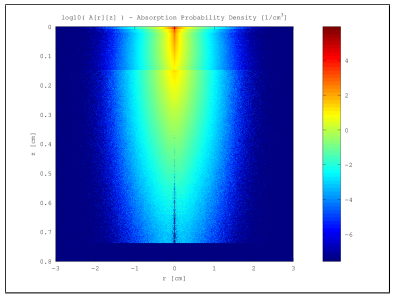
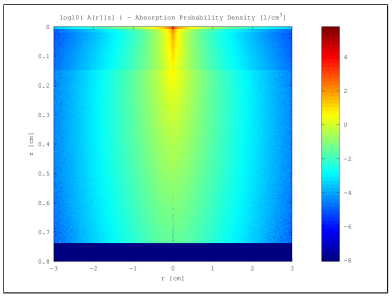


Figure 151: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

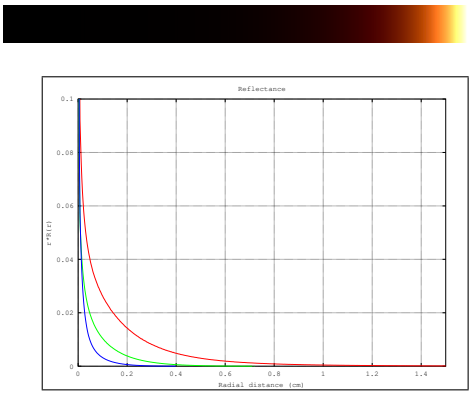


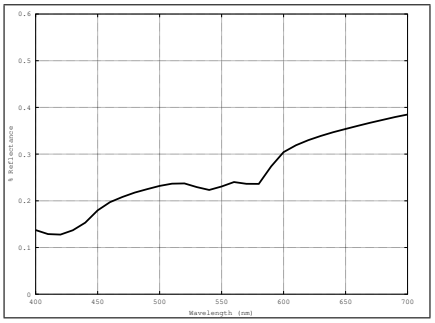




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	35.041	80.404	17.491	57.559	12.268	50.025
Papillary-dermis	0.012592	3.2353	54.81	1.8888	36.388	0.44328	30.688
Reticular-dermis	0.12732	1.6022	57.191	0.92727	34.723	0.25118	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 152: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



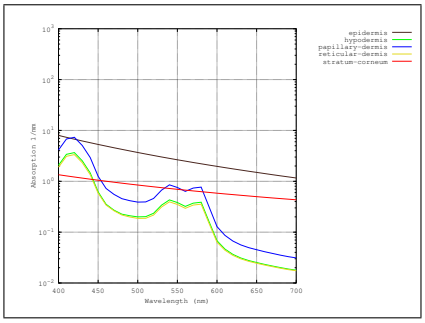


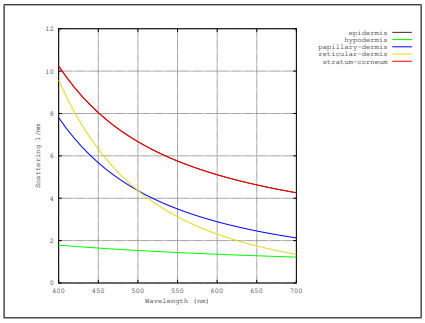
Fitting	R	G	B
w_i	(637.621, 42.443, 6.549, 1.420, 0.328, 0.049)	(2610.510, 82.073, 6.180, 1.534, 0.354, 0.060)	(450.848, 37.227, 6.803, 1.783, 0.346, 0.047)
v_i	(0.579, 3.023, 25.140, 190.131, 1446.649, 9969.370)	(0.159, 1.471, 12.093, 73.984, 470.838, 2933.331)	(0.494, 2.049, 10.328, 44.549, 213.339, 1176.079)
RMS,AMAX	6.27e-11, 2e-03f	7.81e-09, 2e-02f	2.41e-12, 3e-04f

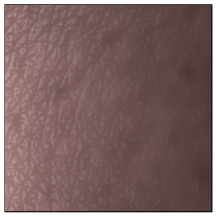
Figure 153: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =1 v_m 3 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	1	3	5	0.05	2.1e-4	0.069549







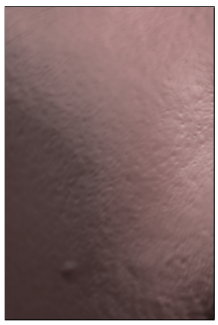
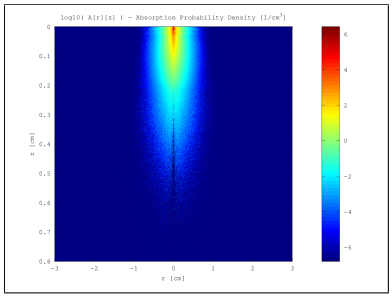
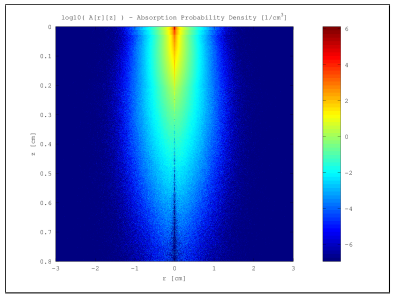
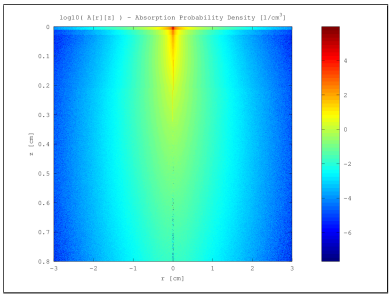


Figure 154: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

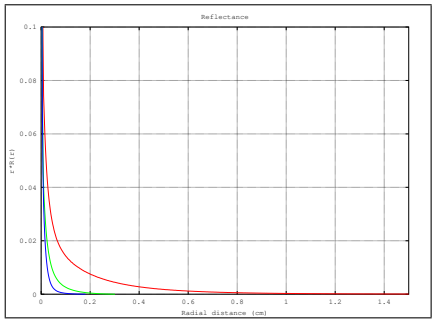


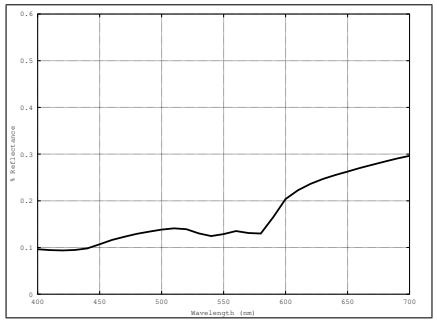




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	53.075	80.404	26.503	57.559	18.583	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 155: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



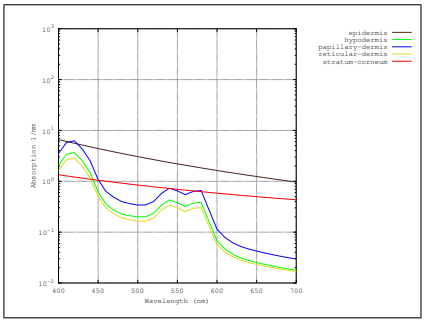


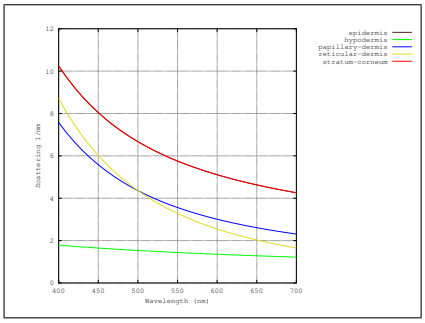
Fitting	R	G	B
w_i	(659.799, 64.247, 6.410, 1.257, 0.207, 0.029)	(384.672, 38.730, 4.378, 1.271, 0.284, 0.041)	(475.320, 42.531, 7.405, 2.789, 0.616, 0.049)
v_i	(0.526, 2.792, 22.860, 152.625, 1243.590, 10085.375)	(0.499, 2.391, 13.054, 52.092, 216.764, 1075.516)	(0.443, 1.752, 5.488, 17.360, 61.678, 310.624)
RMS,AMAX	2.08e-12, 5e-04f	2.57e-15, 9e-06f	4.97e-10, 4e-03f

Figure 156: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =1 v_m 3 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	1	3	5	0.05	2.1e-4	0.099683





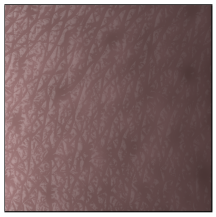
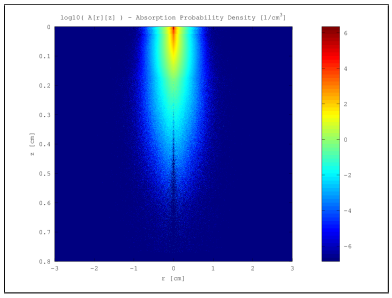
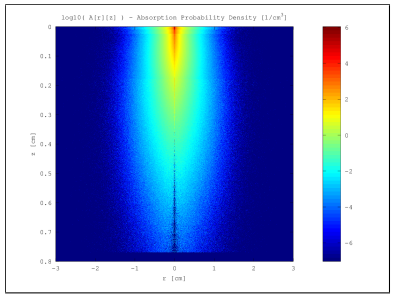
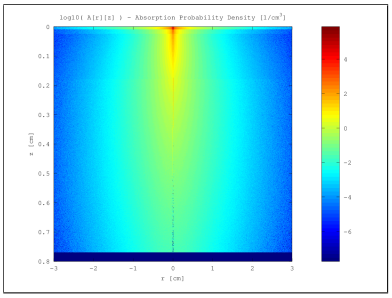


Figure 157: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

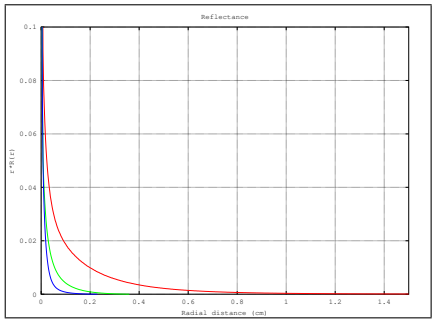


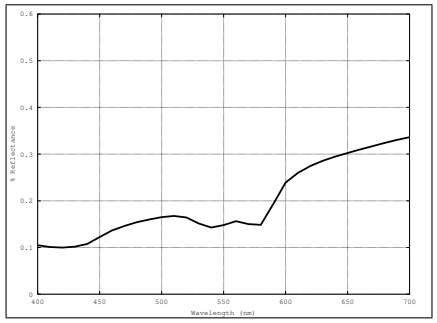




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	44.058	80.404	21.997	57.559	15.426	50.025
Papillary-dermis	0.015295	10.805	55.809	6.4944	35.614	0.78613	29.197
Reticular-dermis	0.15465	5.0424	60.173	3.0206	32.821	0.40559	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 158: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.

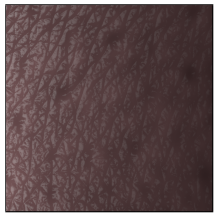




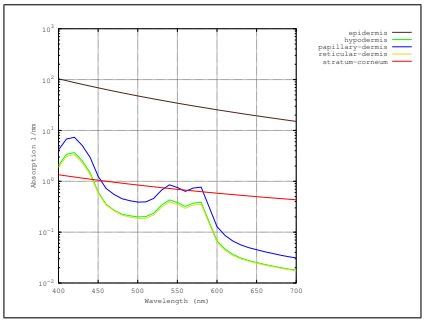
Fitting	R	G	B
w_i	(661.006, 66.503, 7.017, 1.424, 0.270, 0.039)	(402.934, 48.827, 5.166, 1.461, 0.339, 0.052)	(471.559, 45.252, 6.707, 1.926, 0.360, 0.036)
v_i	(0.520, 2.513, 21.547, 154.342, 1242.020, 9519.413)	(0.455, 1.978, 12.042, 54.280, 252.121, 1335.379)	(0.452, 1.854, 8.117, 28.610, 107.104, 552.076)
RMS,AMAX	7.97e-12, 9e-04f	7.61e-12, 5e-04f	3.56e-11, 1e-03f

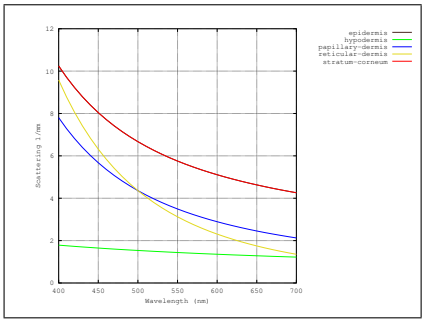
Figure 159: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =0 v_m 40 v_{Hb} 5



Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	0	40	5	0.05	2.1e-4	0.081579





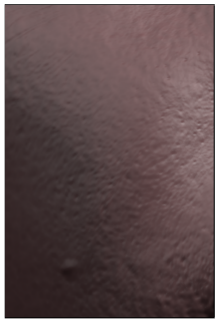
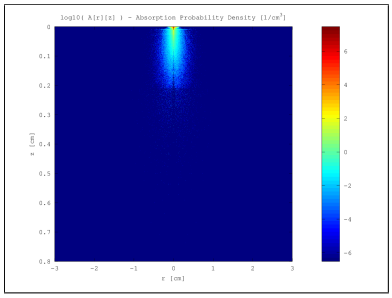
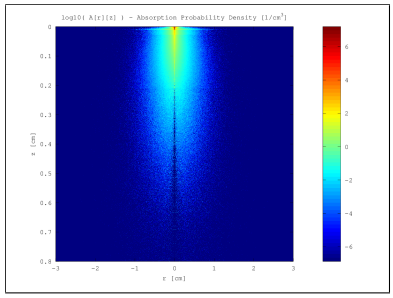
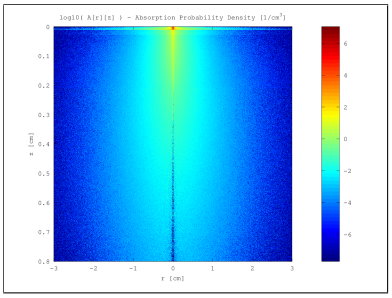


Figure 160: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

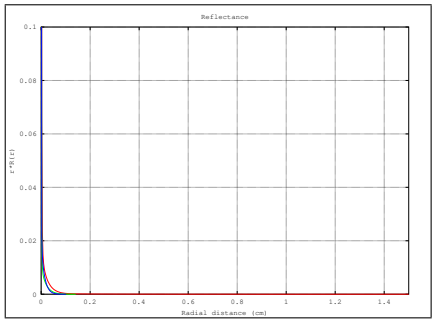


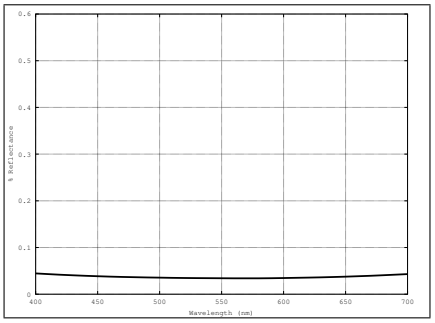




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	688.56	80.404	344.06	57.559	241.11	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 161: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



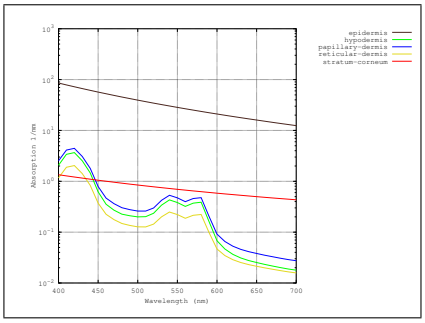


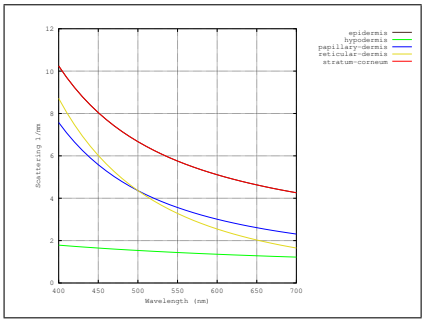
Fitting	R	G	B
w_i	(1466.005, 207.022, 49.440, 3.051, 0.632, 0.107)	(236.108, 201.975, 95.145, 3.348, 0.613, 0.134)	(87.338, 87.004, 77.299, 73.839, 73.559, -1.321)
v_i	(0.209, 0.395, 1.153, 6.027, 37.077, 203.507)	(0.298, 0.290, 0.512, 2.958, 19.420, 103.647)	(0.457, 0.354, 0.392, 0.358, 0.623, 0.141)
RMS,AMAX	3.71e-08, 4e-02f	2.13e-08, 2e-02f	1.22e-05, 4e-01f

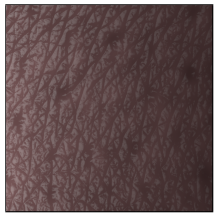
Figure 162: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =0 v_m 40 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	0	40	5	0.05	2.1e-4	0.12802







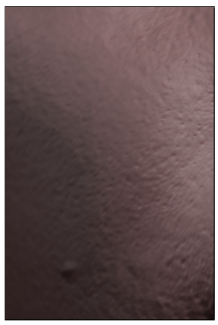
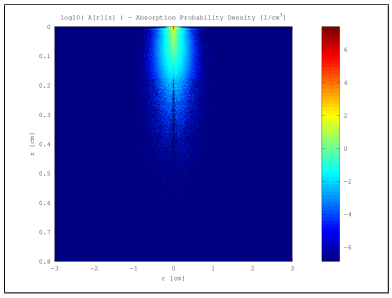
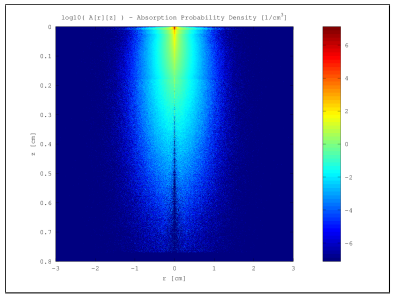
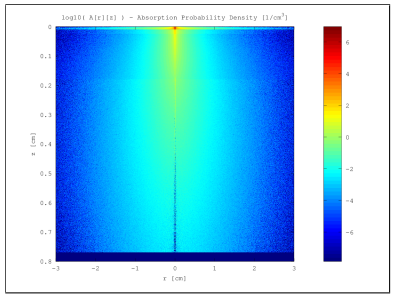


Figure 163: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

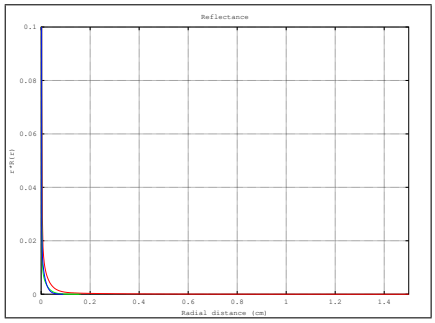


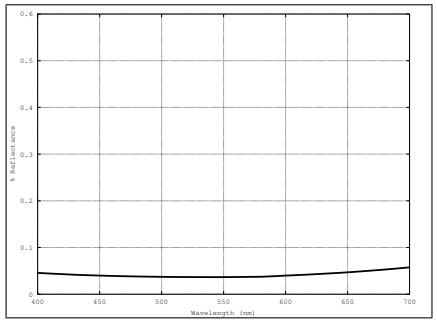




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	568.33	80.404	283.98	57.559	199.01	50.025
Papillary-dermis	0.015295	7.8938	55.809	4.723	35.614	0.65427	29.197
Reticular-dermis	0.15465	3.7192	60.173	2.2155	32.821	0.34621	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 164: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



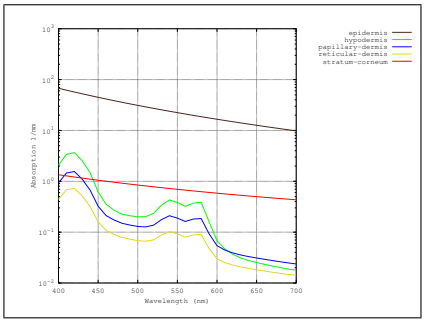


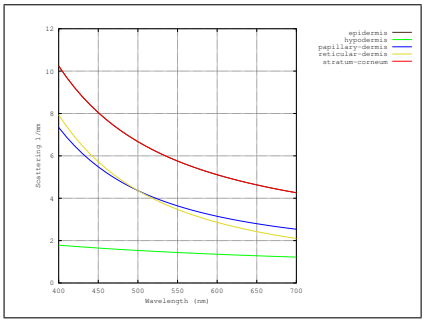
Fitting	R	G	B
w_i	(690.022, 239.882, 15.214, 1.562, 0.287, 0.011)	(291.182, 269.823, 87.132, 3.509, 0.593, 0.122)	(255.936, 235.073, 168.587, 3.798, 1.051, 0.218)
v_i	(0.290, 0.564, 2.369, 16.771, 115.479, 1632.260)	(0.248, 0.277, 0.596, 3.331, 21.531, 112.777)	(0.263, 0.261, 0.415, 3.201, 15.428, 63.855)
RMS,AMAX	3.91e-08, 5e-02f	6.24e-09, 1e-02f	6.17e-12, 3e-04f

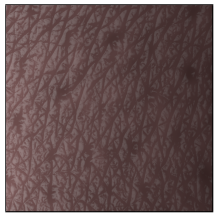
Figure 165: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =0 v_m 40 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	0	40	5	0.05	2.1e-4	0.18059







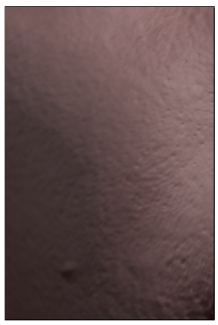
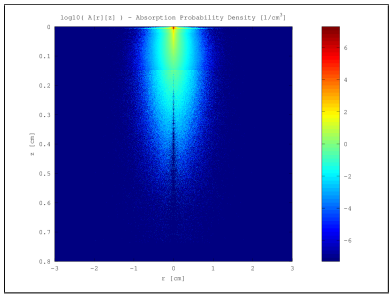
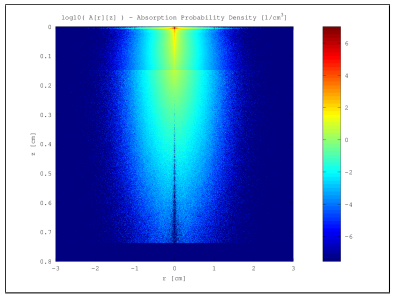
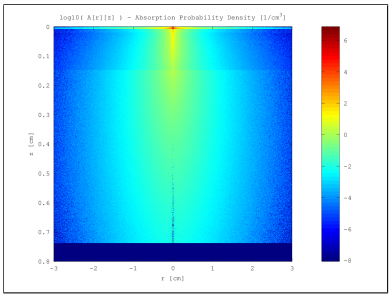


Figure 166: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

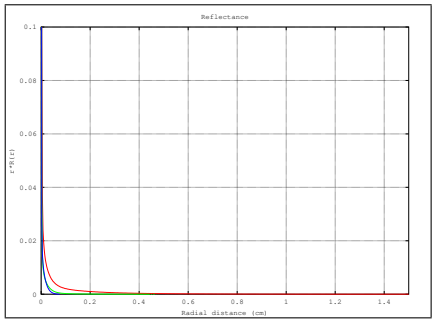


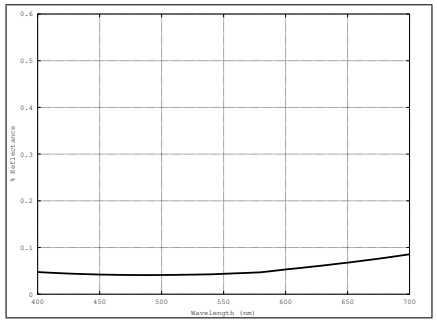




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	448.1	80.404	223.9	57.559	156.91	50.025
Papillary-dermis	0.012592	3.2353	54.81	1.8888	36.388	0.44328	30.688
Reticular-dermis	0.12732	1.6022	57.191	0.92727	34.723	0.25118	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 167: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



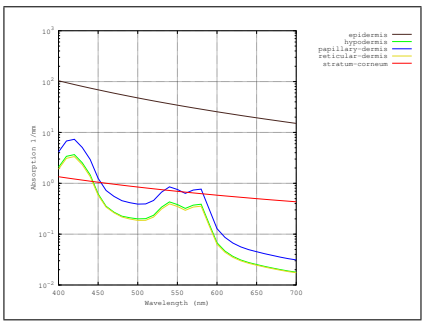


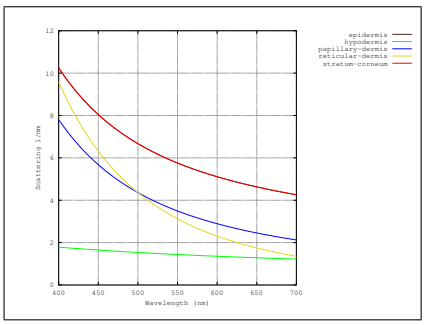
Fitting	R	G	B
w_i	(673.694, 18.833, 2.305, 0.478, 0.060, 0.007)	(487.082, 138.105, 20.405, 1.589, 0.349, 0.033)	(135.415, 115.737, 73.657, 68.324, 57.710, 7.951)
v_i	(0.464, 2.315, 14.423, 88.086, 624.938, 6130.756)	(0.261, 0.431, 1.313, 8.339, 51.064, 317.506)	(0.266, 0.437, 0.430, 0.475, 0.712, 0.050)
RMS,AMAX	3.79e-13, 2e-04f	1.08e-07, 4e-02f	1.90e-05, 6e-01f

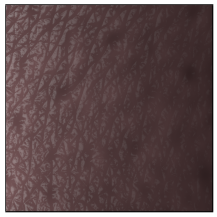
Figure 168: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =1 v_m 40 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	1	40	5	0.05	2.1e-4	0.069549







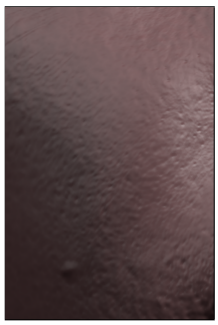
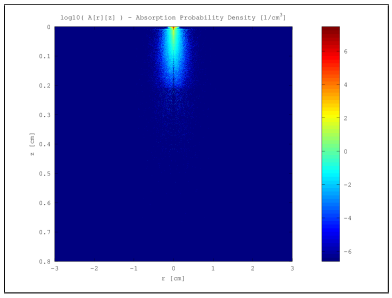
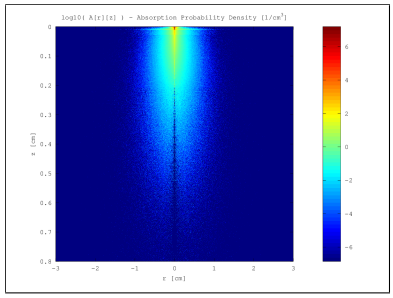
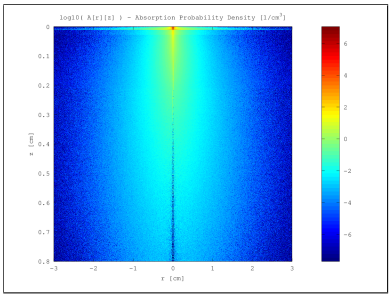


Figure 169: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

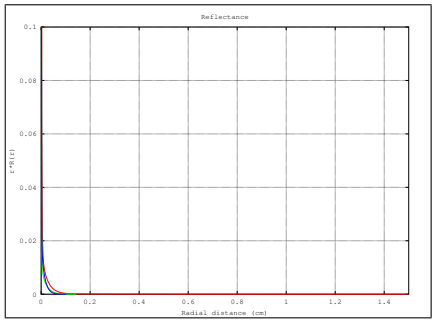


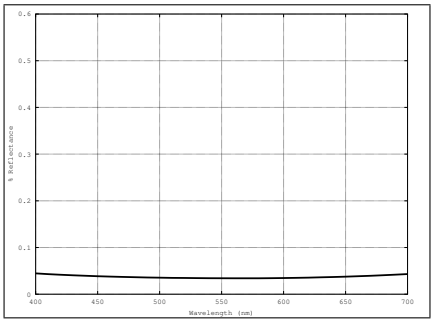




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	688.56	80.404	344.06	57.559	241.11	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 170: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



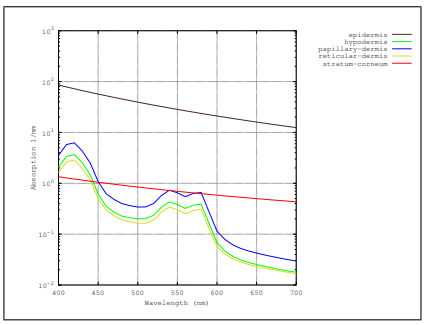


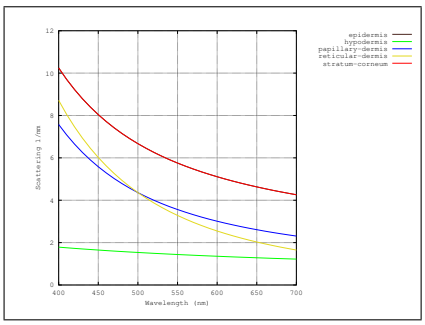
Fitting	R	G	B
w_i	(1016.777, 151.330, 20.182, 2.028, 0.484, 0.070)	(376.100, 210.838, 72.170, 2.837, 0.546, 0.116)	(130.551, 101.399, 70.040, 63.279, 51.776, -5.084)
v_i	(0.259, 0.564, 1.668, 8.669, 49.926, 257.197)	(0.243, 0.292, 0.580, 3.445, 22.265, 112.368)	(0.375, 0.382, 0.395, 0.650, 0.410, 0.701)
RMS,AMAX	1.88e-08, 3e-02f	1.18e-08, 1e-02f	1.16e-06, 1e-01f

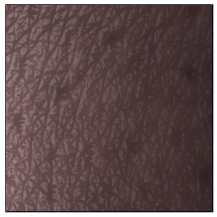
Figure 171: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =1 v_m 40 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	1	40	5	0.05	2.1e-4	0.099683







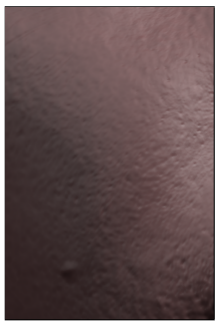
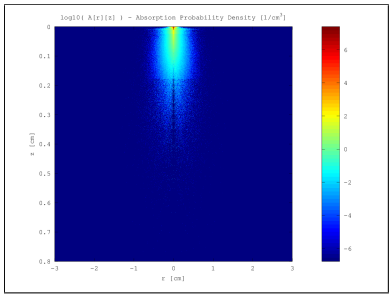
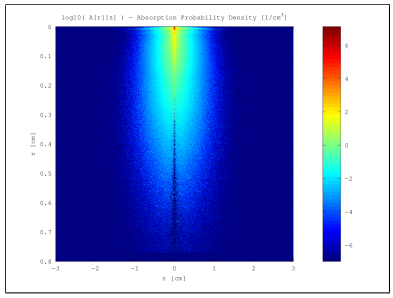
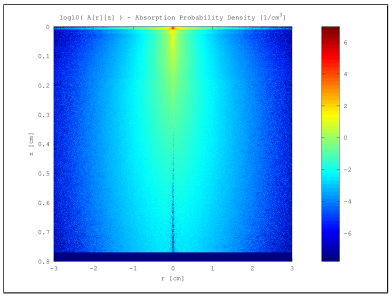


Figure 172: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

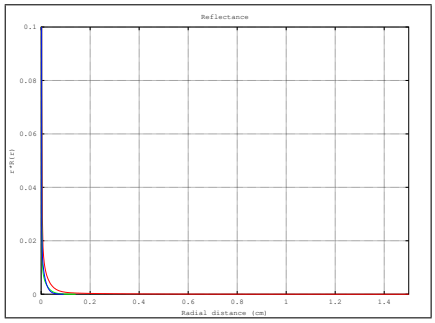


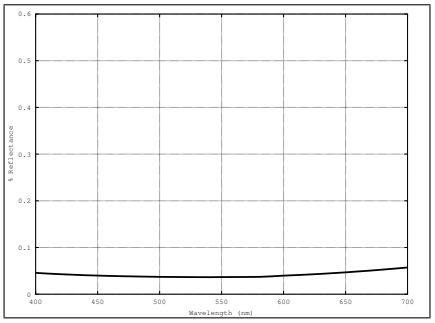




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	568.33	80.404	283.98	57.559	199.01	50.025
Papillary-dermis	0.015295	10.805	55.809	6.4944	35.614	0.78613	29.197
Reticular-dermis	0.15465	5.0424	60.173	3.0206	32.821	0.40559	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 173: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



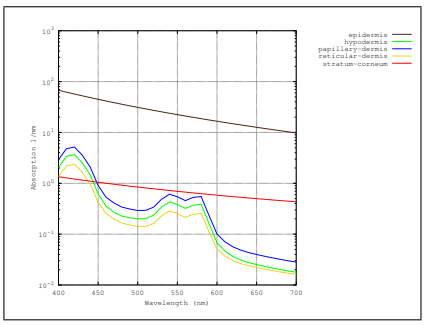


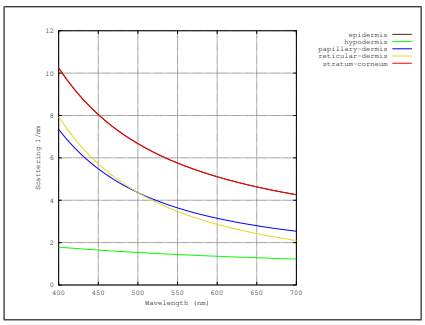
Fitting	R	G	B
w_i	(707.346, 286.420, 24.399, 2.026, 0.366, 0.018)	(289.042, 263.638, 33.475, 2.821, 0.547, 0.117)	(344.305, 186.077, 130.606, 3.718, 1.042, 0.216)
v_i	(0.269, 0.501, 1.803, 12.783, 92.748, 1067.494)	(0.265, 0.336, 0.805, 3.797, 22.847, 114.452)	(0.266, 0.271, 0.435, 3.254, 15.537, 64.143)
RMS,AMAX	1.98e-07, 1e-01f	5.44e-08, 3e-02f	2.34e-11, 6e-04f

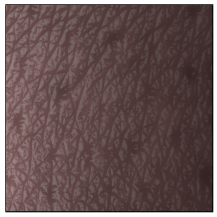
Figure 174: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =1 v_m 40 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	1	40	5	0.05	2.1e-4	0.14797







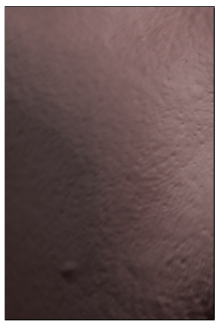
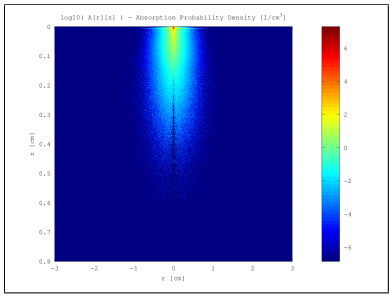
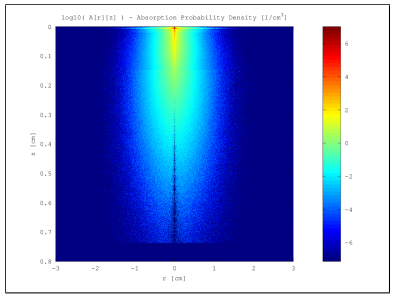
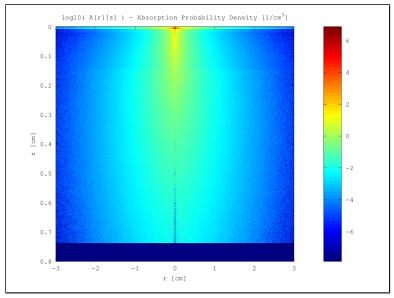


Figure 175: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

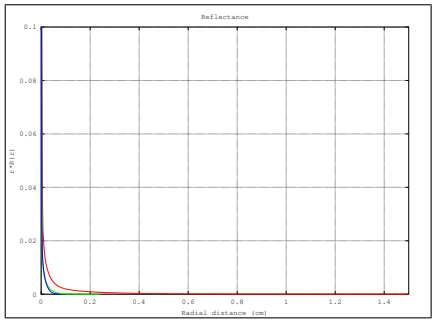


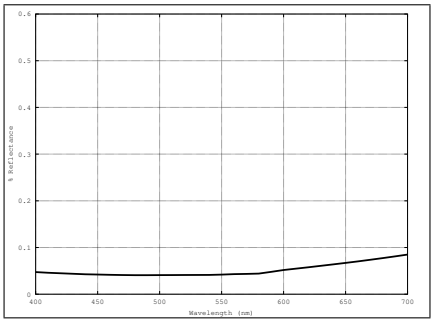




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	448.1	80.404	223.9	57.559	156.91	50.025
Papillary-dermis	0.012592	9.0584	54.81	5.4315	36.388	0.70701	30.688
Reticular-dermis	0.12732	4.2485	57.191	2.5375	34.723	0.36996	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 176: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



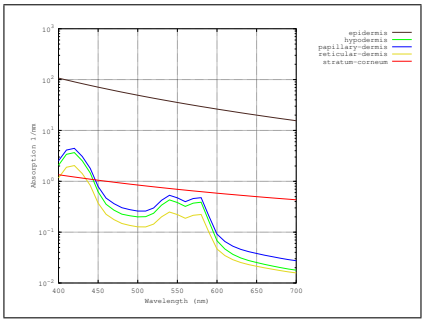


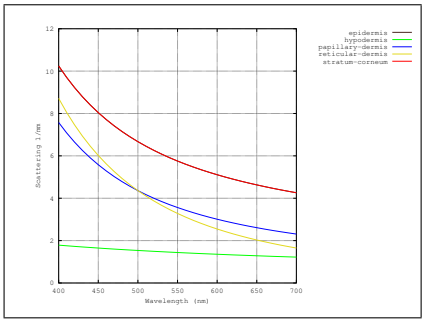
Fitting	R	G	B
w_i	(672.870, 19.445, 2.381, 0.496, 0.064, 0.007)	(107.720, 97.517, 70.151, 58.281, 53.753, -2.191)	(485.069, 186.931, 4.292, 1.052, 0.234, -1.189)
v_i	(0.462, 2.256, 13.768, 83.246, 568.475, 5736.524)	(0.396, 0.373, 0.473, 0.514, 0.813, 0.089)	(0.257, 0.435, 3.133, 15.199, 60.818, 0.018)
RMS,AMAX	7.81e-13, 2e-04f	2.21e-05, 6e-01f	8.13e-11, 1e-03f

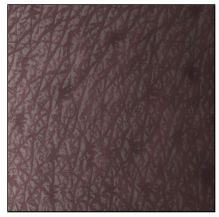
Figure 177: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =0 v_m 50 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	0	50	5	0.05	2.1e-4	0.12802







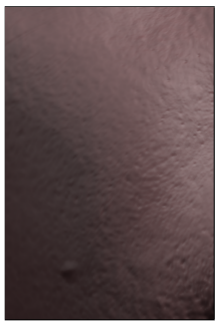
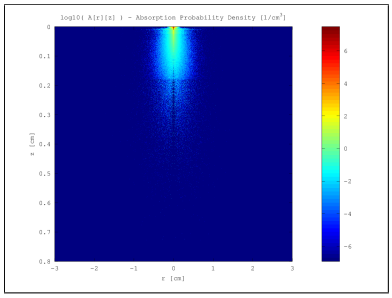
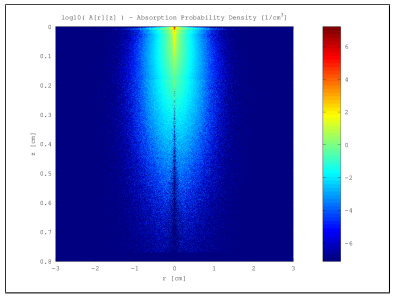
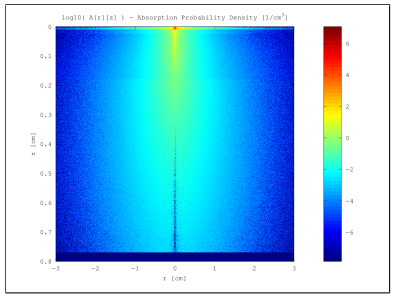


Figure 178: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

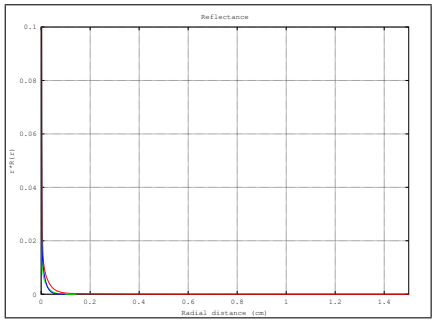


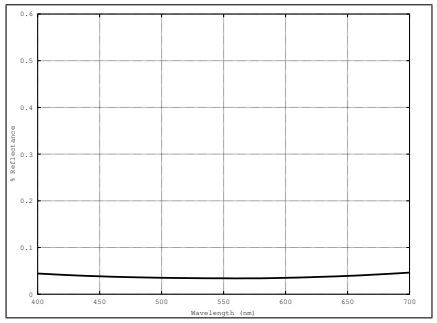




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	710.02	80.404	354.79	57.559	248.63	50.025
Papillary-dermis	0.015295	7.8938	55.809	4.723	35.614	0.65427	29.197
Reticular-dermis	0.15465	3.7192	60.173	2.2155	32.821	0.34621	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 179: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



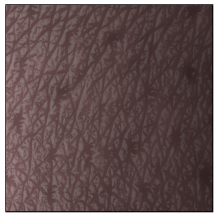


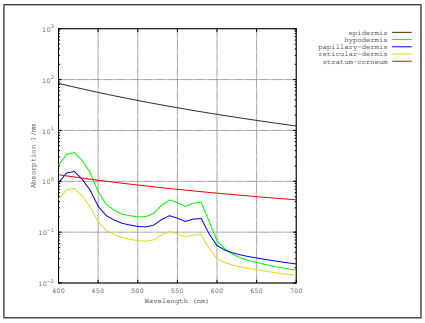
Fitting	R	G	B
w_i	(690.252, 363.315, 38.287, 2.444, 0.535, 0.071)	(171.625, 145.353, 138.167, 87.433, 2.047, 0.301)	(114.417, 93.138, 88.514, 83.406, 48.080, -7.176)
v_i	(0.257, 0.384, 1.261, 7.654, 48.468, 284.458)	(0.478, 0.219, 0.286, 0.309, 6.157, 63.672)	(0.397, 0.356, 0.345, 0.437, 0.722, 0.757)
RMS,AMAX	4.31e-08, 5e-02f	2.80e-09, 6e-03f	1.70e-11, 5e-04f

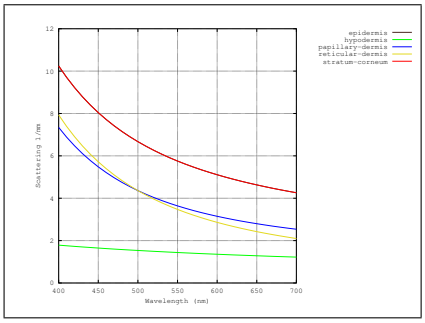
Figure 180: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =0 v_m 50 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	0	50	5	0.05	2.1e-4	0.18059







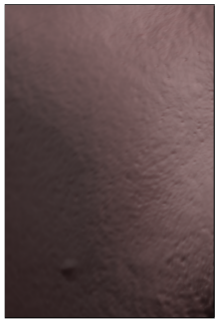
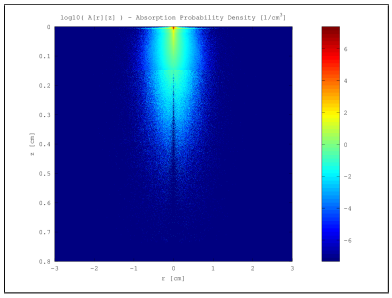
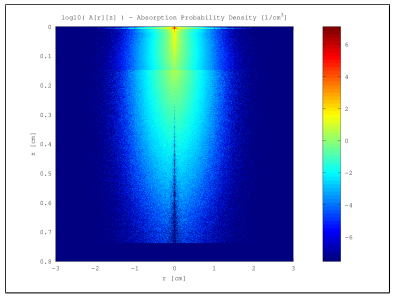
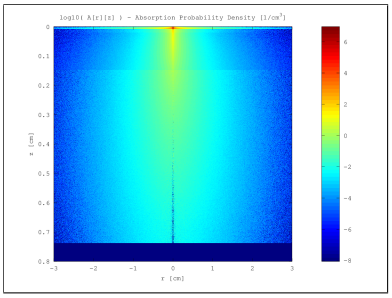


Figure 181: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

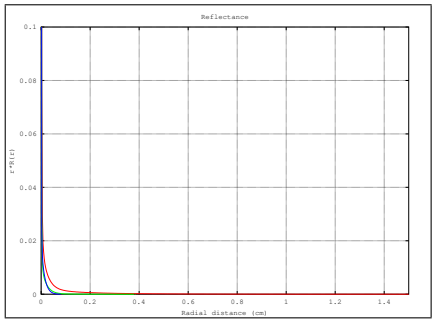


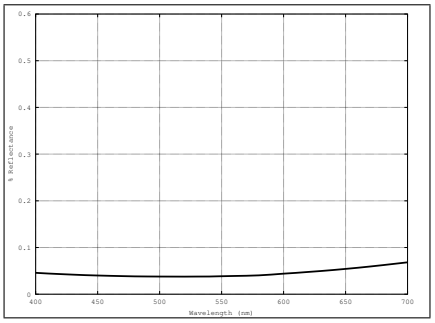




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	559.74	80.404	279.69	57.559	196.01	50.025
Papillary-dermis	0.012592	3.2353	54.81	1.8888	36.388	0.44328	30.688
Reticular-dermis	0.12732	1.6022	57.191	0.92727	34.723	0.25118	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 182: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.

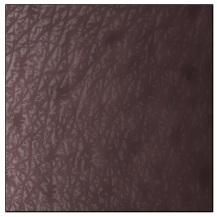




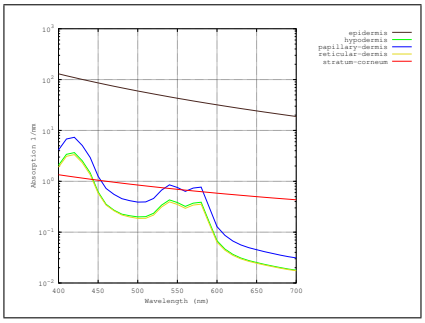
Fitting	R	G	B
w_i	(816.541, 43.632, 2.889, 0.600, 0.088, 0.007)	(107.668, 86.800, 71.643, 60.966, 47.921, -5.577)	(125.967, 106.004, 70.423, 68.016, 47.756, -5.771)
v_i	(0.360, 1.343, 8.931, 54.733, 328.112, 4318.537)	(0.356, 0.628, 0.455, 0.486, 0.450, 0.513)	(0.388, 0.413, 0.368, 0.468, 0.688, 0.592)
RMS,AMAX	2.35e-07, 1e-01f	1.10e-08, 1e-02f	1.82e-07, 5e-02f

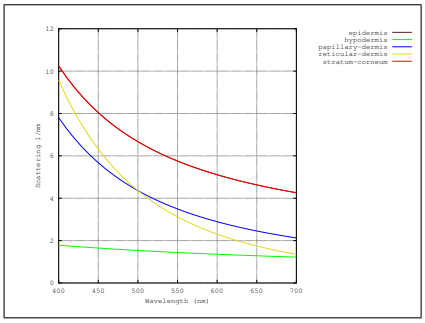
Figure 183: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =1 v_m 50 v_{Hb} 5



Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	1	50	5	0.05	2.1e-4	0.069549





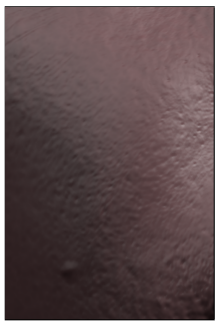
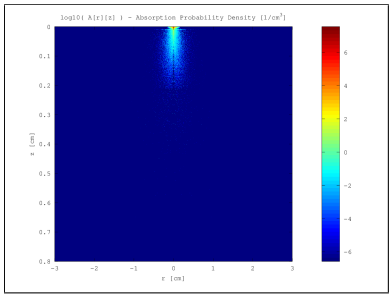
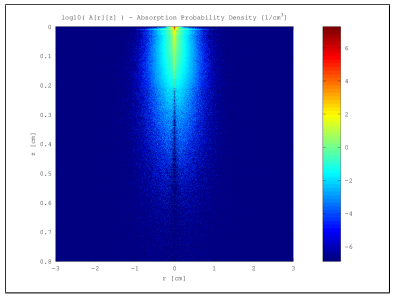
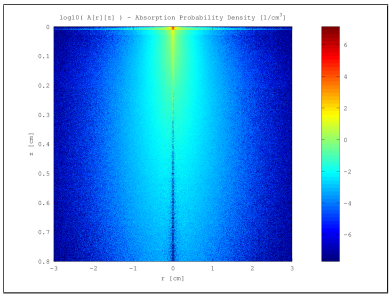


Figure 184: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

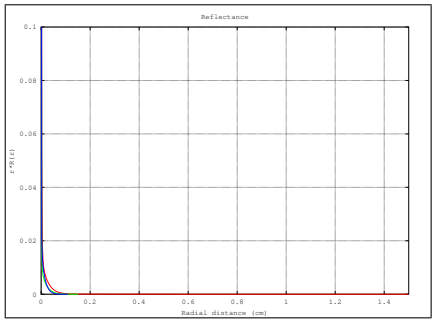


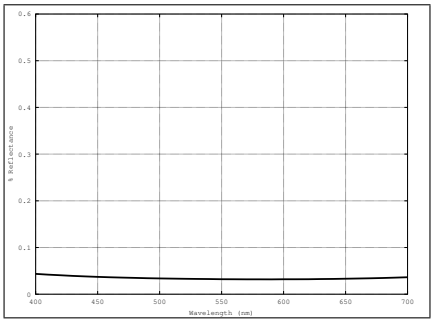




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	860.31	80.404	429.88	57.559	301.26	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 185: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.

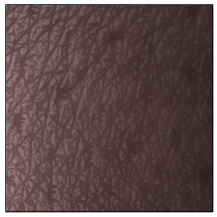




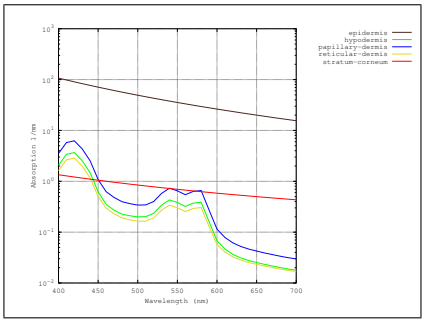
Fitting	R	G	B
w_i	(283.933, 141.543, 115.189, 112.049, 58.039, -11.139)	(425.401, 172.214, 2.290, 1.370, 0.512, 0.109)	(317.038, 235.381, 91.982, 2.849, 0.537, -53.557)
v_i	(0.394, 0.349, 0.391, 0.755, 0.458, 0.788)	(0.248, 0.438, 3.730, 0.005, 23.214, 114.856)	(0.259, 0.278, 0.463, 5.734, 40.055, 0.006)
RMS,AMAX	2.59e-06, 4e-01f	5.51e-10, 3e-03f	1.09e-08, 1e-02f

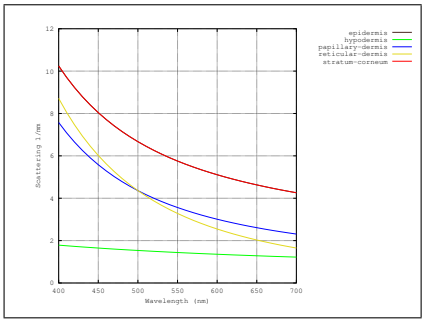
Figure 186: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =1 v_m 50 v_{Hb} 5



Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	1	50	5	0.05	2.1e-4	0.099683





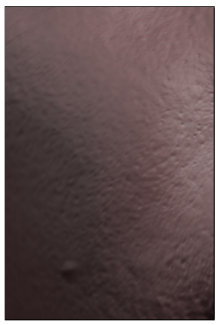
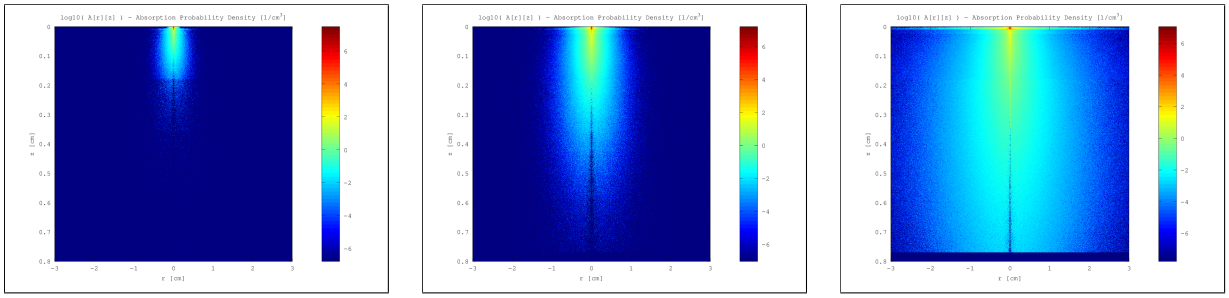
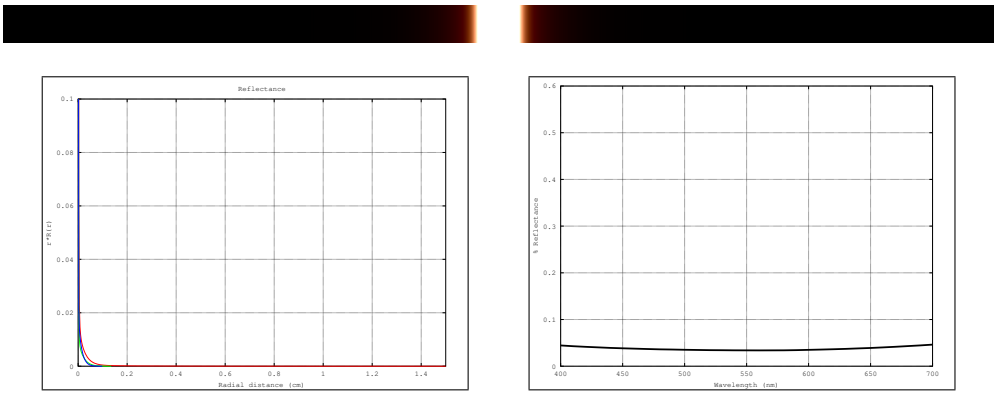


Figure 187: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.



Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	710.02	80.404	354.79	57.559	248.63	50.025
Papillary-dermis	0.015295	10.805	55.809	6.4944	35.614	0.78613	29.197
Reticular-dermis	0.15465	5.0424	60.173	3.0206	32.821	0.40559	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 188: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.

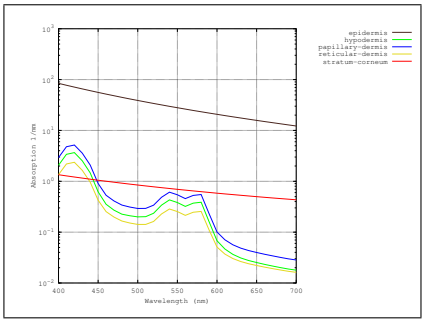


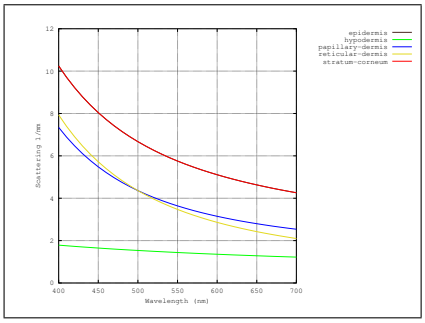
Fitting	R	G	B
w_i	(240.505, 236.991, 214.550, 132.673, 30.072, 0.042)	(438.925, 128.075, 118.318, 83.579, 1.990, 0.301)	(272.685, 268.934, 153.704, 3.492, 1.003, 0.204)
v_i	(0.393, 0.367, 0.337, 0.311, 1.726, 0.866)	(0.218, 0.324, 0.201, 0.576, 6.222, 63.589)	(0.249, 0.254, 0.406, 3.356, 16.096, 65.806)
RMS,AMAX	4.89e-06, 5e-01f	9.69e-10, 4e-03f	1.17e-11, 4e-04f

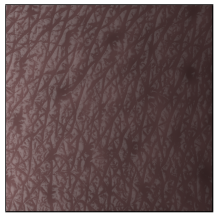
Figure 189: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =1 v_m 50 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	1	50	5	0.05	2.1e-4	0.14797







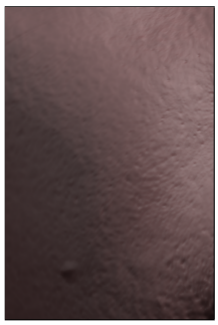
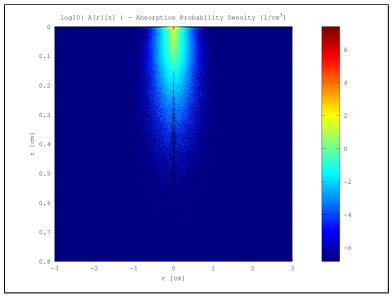
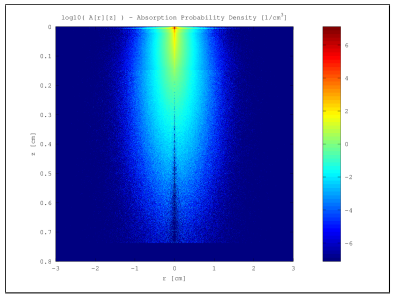
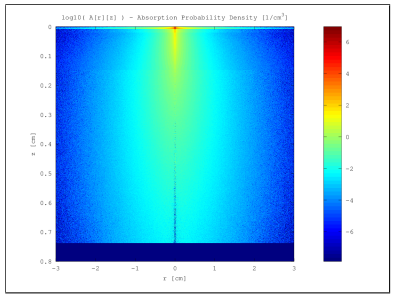


Figure 190: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

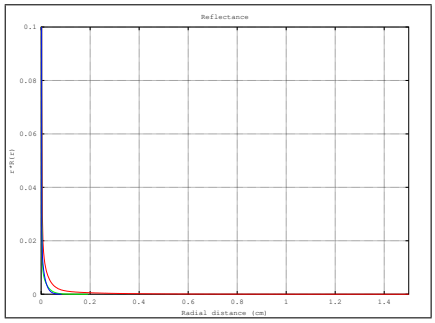


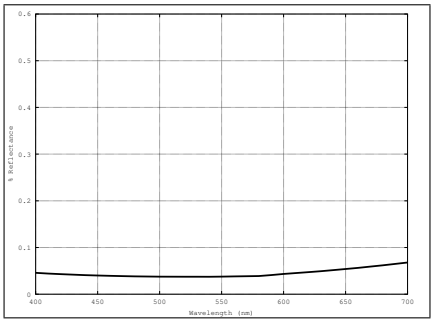




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	559.74	80.404	279.69	57.559	196.01	50.025
Papillary-dermis	0.012592	9.0584	54.81	5.4315	36.388	0.70701	30.688
Reticular-dermis	0.12732	4.2485	57.191	2.5375	34.723	0.36996	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 191: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



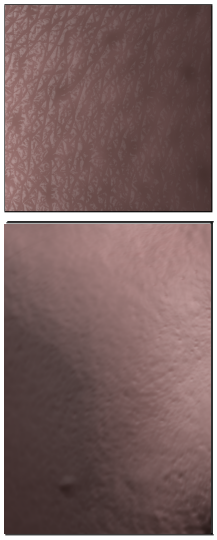


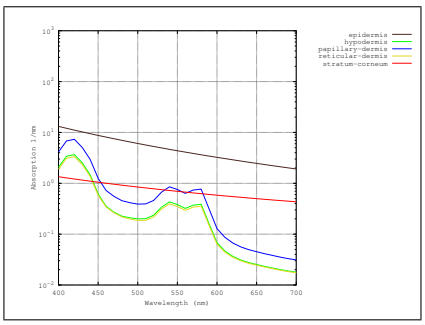
Fitting	R	G	B
w_i	(834.328, 70.678, 5.642, 1.063, 0.186, 0.010)	(99.281, 86.808, 67.400, 61.199, 56.793, -4.129)	(114.444, 95.860, 80.027, 74.917, 46.655, 1.060)
v_i	(0.336, 0.968, 4.536, 29.047, 189.899, 2957.310)	(0.327, 0.590, 0.521, 0.497, 0.437, 0.116)	(0.386, 0.385, 0.624, 0.383, 0.422, 0.259)
RMS,AMAX	1.97e-07, 1e-01f	2.06e-06, 2e-01f	2.83e-08, 2e-02f

Figure 192: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =0 v_m 5 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	0	5	5	0.05	2.1e-4	0.081579





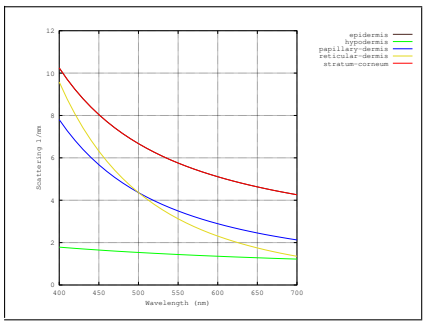
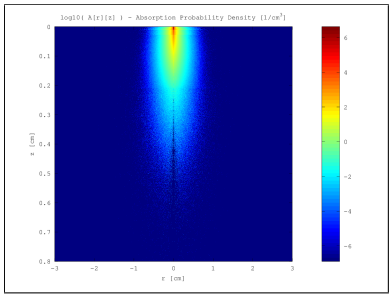
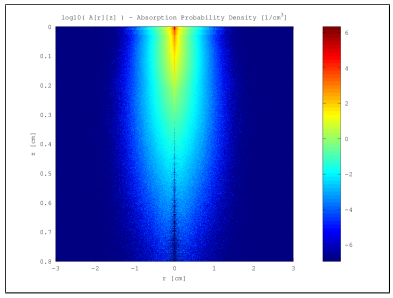
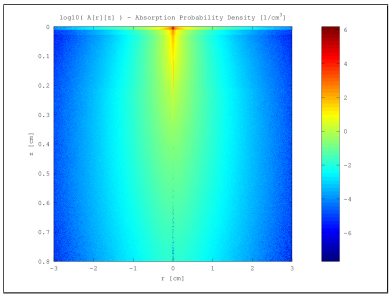


Figure 193: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

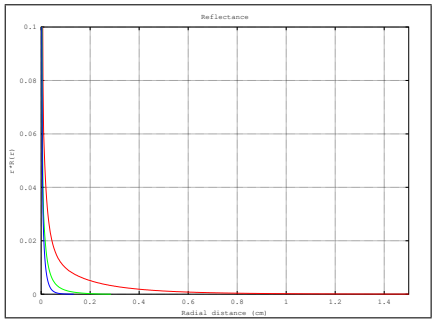


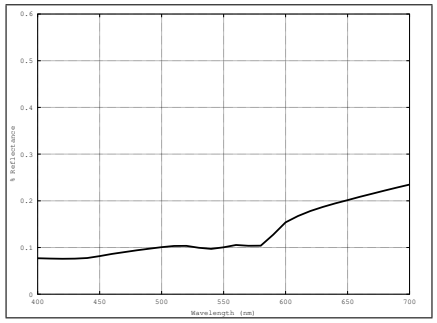




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	87.425	80.404	43.668	57.559	30.612	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 194: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



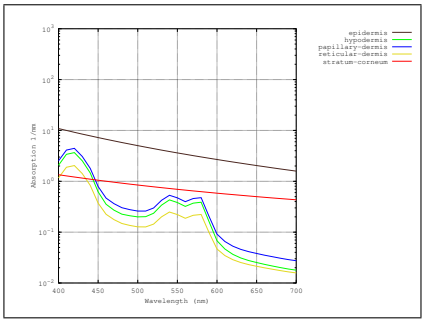


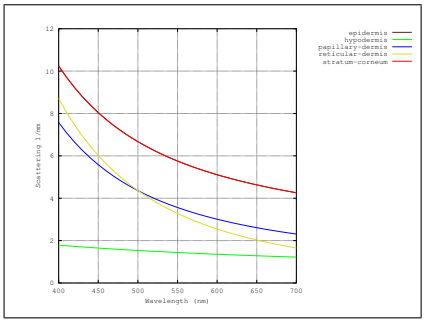
Fitting	R	G	B
w_i	(660.773, 58.113, 5.585, 1.032, 0.155, 0.021)	(393.136, 36.795, 4.944, 2.252, 0.476, 0.051)	(147.949, 146.190, 115.119, 3.567, 2.990, -9.228)
v_i	(0.519, 2.719, 21.121, 137.566, 1131.494, 9555.068)	(0.467, 1.970, 5.862, 21.934, 106.355, 693.779)	(0.931, 0.494, 0.529, 19.026, 0.100, 0.922)
RMS,AMAX	6.69e-13, 3e-04f	1.89e-10, 2e-03f	4.85e-06, 4e-01f

Figure 195: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =0 v_m 5 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	0	5	5	0.05	2.1e-4	0.12802





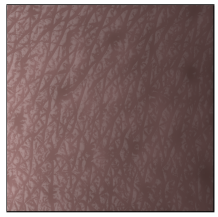
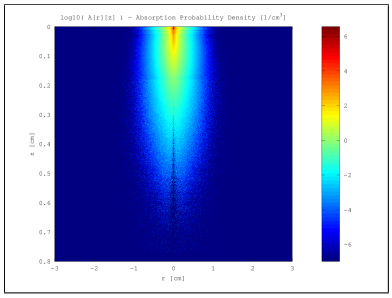
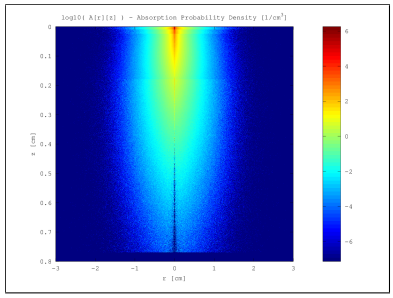
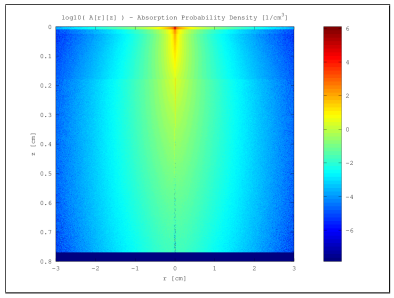


Figure 196: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

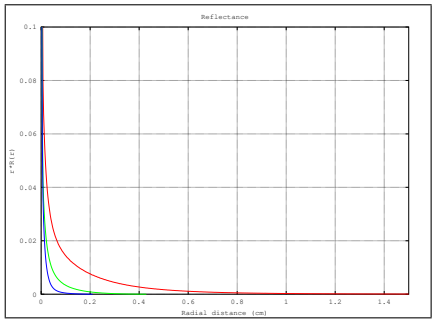


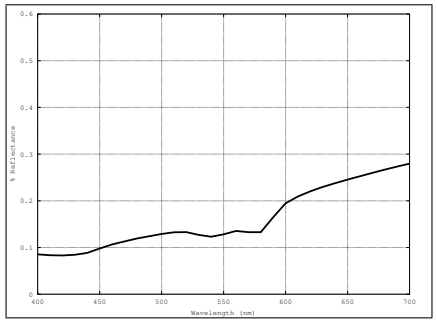




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	72.397	80.404	36.158	57.559	25.349	50.025
Papillary-dermis	0.015295	7.8938	55.809	4.723	35.614	0.65427	29.197
Reticular-dermis	0.15465	3.7192	60.173	2.2155	32.821	0.34621	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 197: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



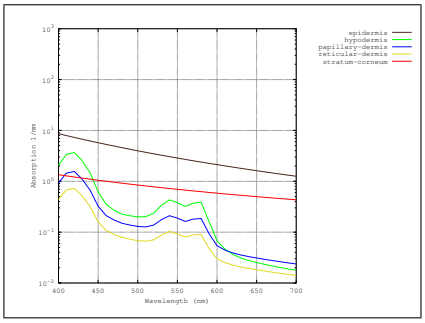


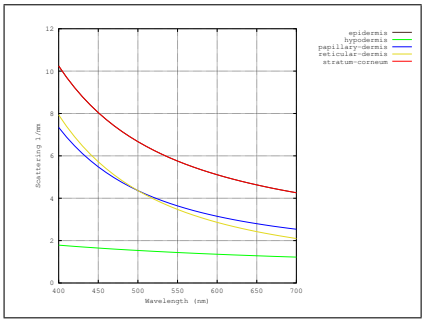
Fitting	R	G	B
w_i	(664.764, 62.800, 6.345, 1.228, 0.219, 0.031)	(399.076, 42.315, 4.436, 1.142, 0.233, 0.034)	(515.395, 51.317, 14.298, 3.914, 0.746, 0.057)
v_i	(0.509, 2.444, 20.390, 143.770, 1176.057, 9270.799)	(0.459, 1.979, 11.827, 55.087, 279.908, 1646.881)	(0.378, 1.155, 2.851, 11.819, 52.169, 321.691)
RMS,AMAX	1.08e-11, 1e-03f	4.77e-12, 4e-04f	1.58e-08, 2e-02f

Figure 198: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =0 v_m 5 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	0	5	5	0.05	2.1e-4	0.18059





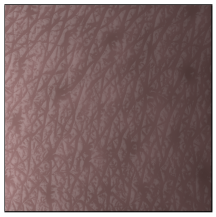
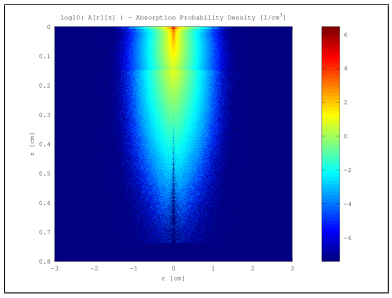
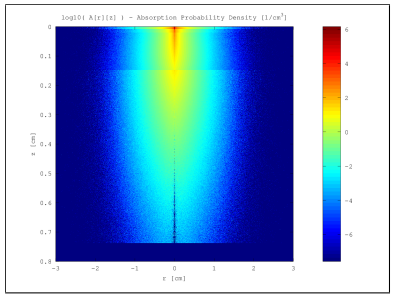
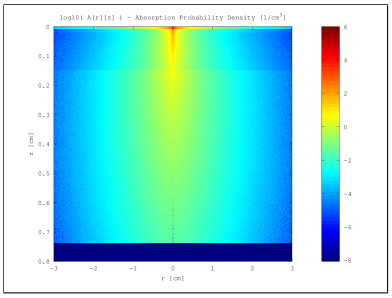


Figure 199: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

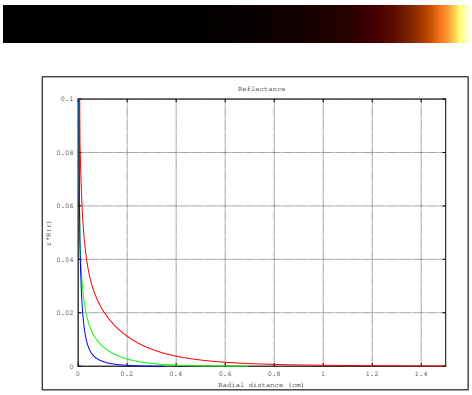


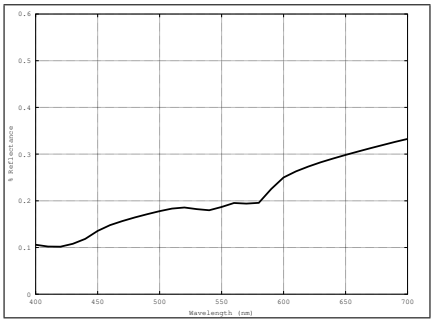




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	57.368	80.404	28.649	57.559	20.087	50.025
Papillary-dermis	0.012592	3.2353	54.81	1.8888	36.388	0.44328	30.688
Reticular-dermis	0.12732	1.6022	57.191	0.92727	34.723	0.25118	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 200: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



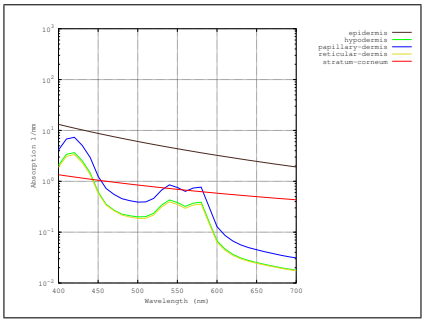


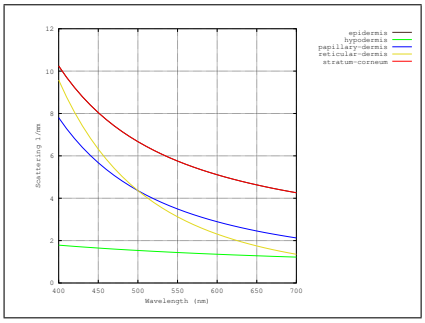
Fitting	R	G	B
w_i	(389.583, 308.129, 64.392, 6.142, 0.494, -0.123)	(179.267, 105.218, 77.169, 9.687, 1.965, 0.257)	(468.439, 40.623, 6.312, 1.634, 0.297, 0.038)
v_i	(0.547, 0.415, 2.406, 43.132, 1259.277, 30.497)	(0.578, 0.530, 0.892, 7.371, 81.596, 0.050)	(0.450, 1.716, 8.255, 34.144, 160.071, 949.315)
RMS,AMAX	8.48e-08, 9e-02f	2.00e-04, 2e+00f	9.98e-10, 6e-03f

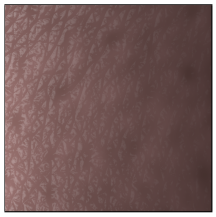
Figure 201: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =1 v_m 5 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	1	5	5	0.05	2.1e-4	0.069549







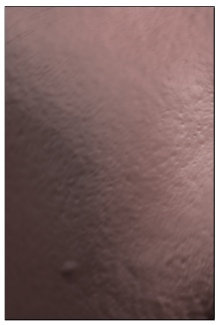
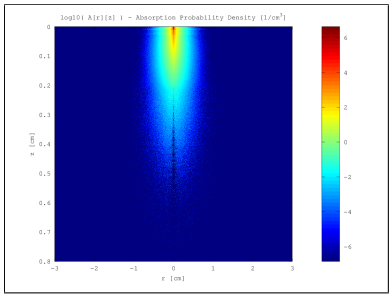
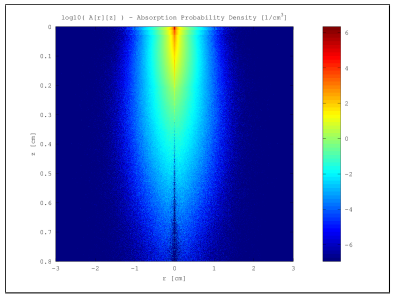
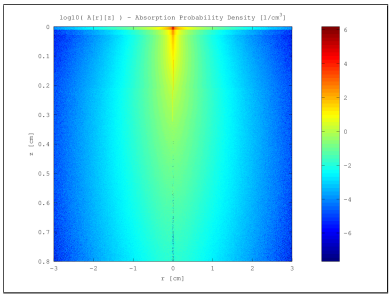


Figure 202: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

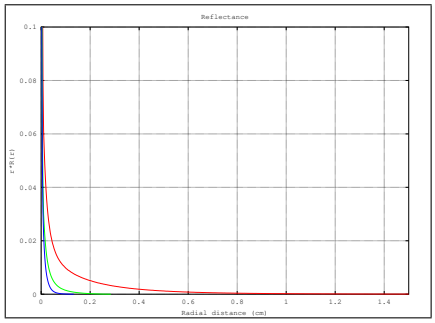


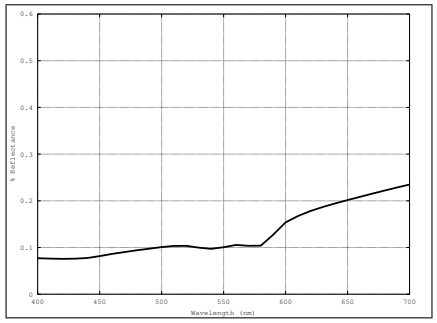




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	87.425	80.404	43.668	57.559	30.612	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 203: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



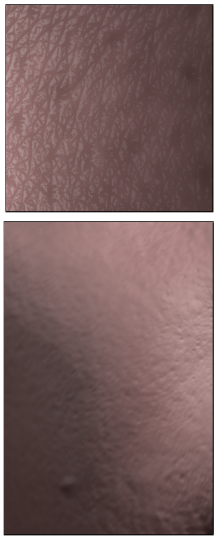


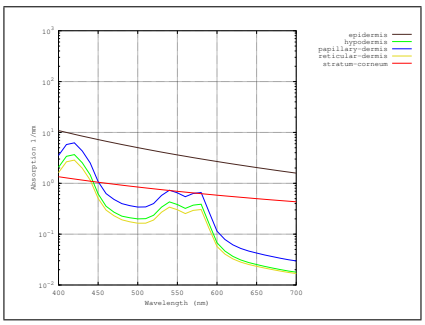
Fitting	R	G	B
w_i	(659.468, 58.515, 5.624, 1.043, 0.156, 0.021)	(386.301, 33.685, 3.684, 1.020, 0.218, 0.028)	(177.415, 142.138, 137.747, 4.865, 1.158, -15.222)
v_i	(0.519, 2.699, 20.938, 136.197, 1123.901, 9527.442)	(0.489, 2.291, 11.551, 44.294, 182.312, 947.270)	(0.451, 0.890, 0.463, 15.188, 0.133, 0.925)
RMS,AMAX	8.31e-13, 3e-04f	9.35e-16, 5e-06f	6.38e-06, 5e-01f

Figure 204: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =1 v_m 5 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	1	5	5	0.05	2.1e-4	0.099683





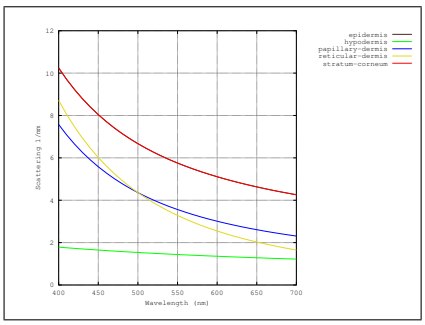
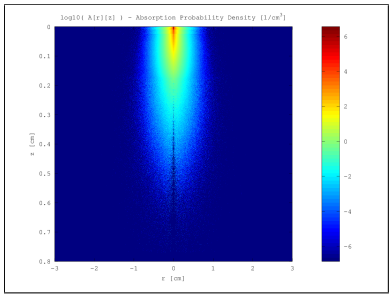
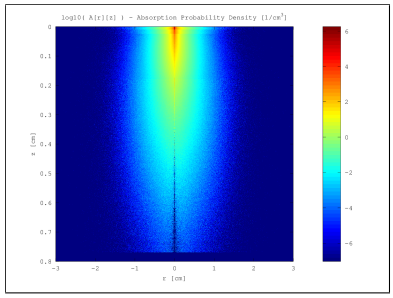
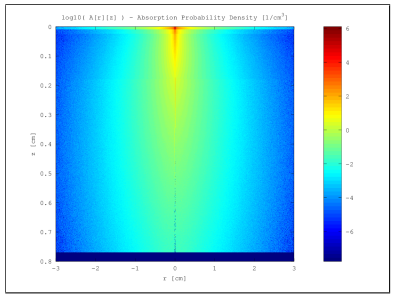


Figure 205: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

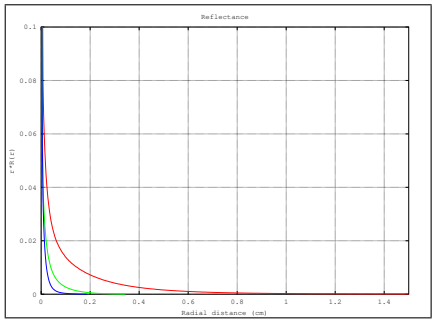


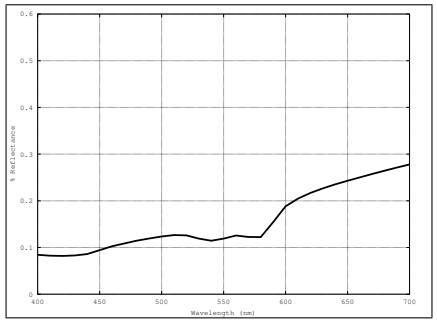




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	72.397	80.404	36.158	57.559	25.349	50.025
Papillary-dermis	0.015295	10.805	55.809	6.4944	35.614	0.78613	29.197
Reticular-dermis	0.15465	5.0424	60.173	3.0206	32.821	0.40559	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 206: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



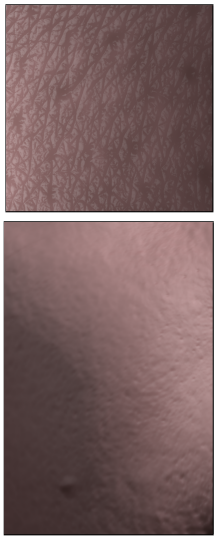


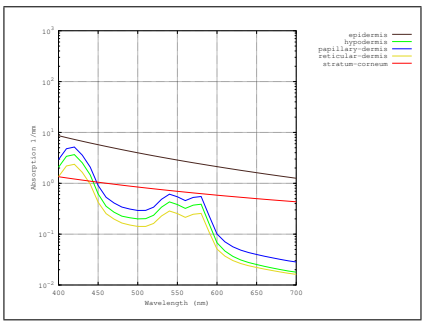
Fitting	R	G	B
w_i	(664.384, 63.538, 6.414, 1.250, 0.220, 0.031)	(408.023, 45.802, 4.620, 1.255, 0.270, 0.038)	(516.944, 74.190, 22.644, 4.320, 0.848, 0.066)
v_i	(0.508, 2.413, 19.917, 138.547, 1124.270, 8926.604)	(0.442, 1.877, 10.718, 46.720, 219.035, 1222.895)	(0.348, 0.848, 2.351, 10.562, 45.502, 256.253)
RMS,AMAX	6.63e-12, 8e-04f	8.18e-12, 5e-04f	1.78e-08, 3e-02f

Figure 207: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =1 v_m 5 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	1	5	5	0.05	2.1e-4	0.14797





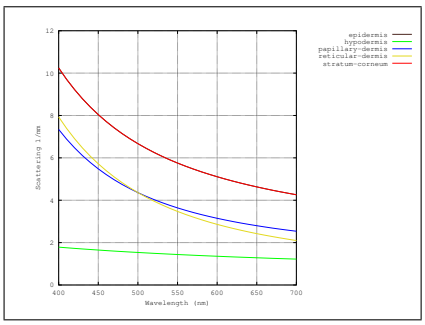
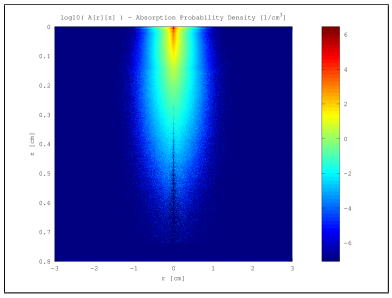
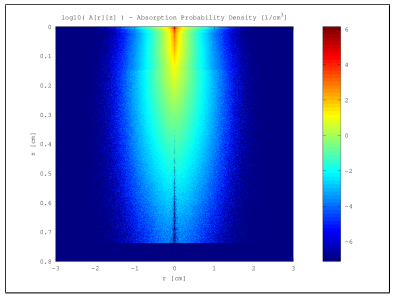
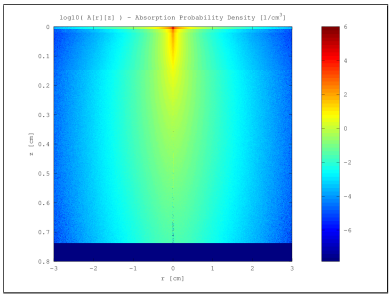


Figure 208: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

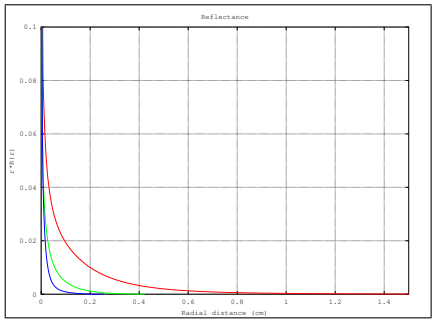


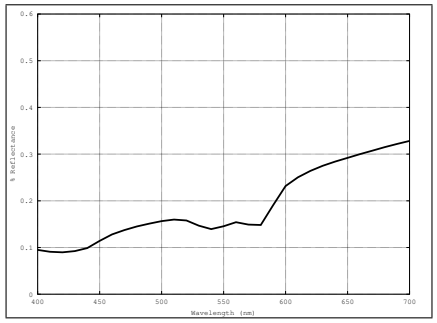




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	57.368	80.404	28.649	57.559	20.087	50.025
Papillary-dermis	0.012592	9.0584	54.81	5.4315	36.388	0.70701	30.688
Reticular-dermis	0.12732	4.2485	57.191	2.5375	34.723	0.36996	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 209: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



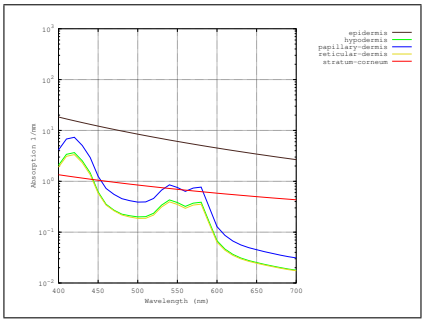


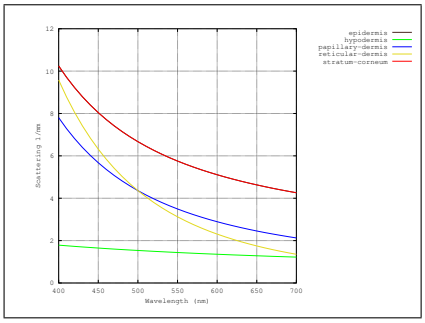
Fitting	R	G	B
w_i	(646.224, 45.342, 6.418, 1.332, 0.280, 0.040)	(383.706, 38.870, 4.954, 1.321, 0.300, 0.047)	(469.001, 40.418, 6.244, 1.696, 0.311, 0.032)
v_i	(0.555, 2.698, 21.799, 159.938, 1230.653, 8832.370)	(0.487, 1.895, 11.563, 56.775, 290.650, 1610.997)	(0.449, 1.701, 7.648, 28.561, 115.555, 638.849)
RMS,AMAX	1.95e-11, 1e-03f	1.32e-11, 6e-04f	1.20e-10, 2e-03f

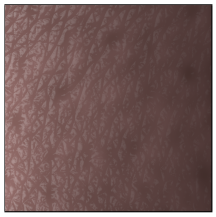
Figure 210: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =0 v_m 7 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	0	7	5	0.05	2.1e-4	0.081579







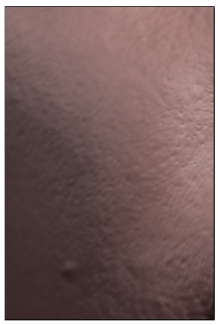
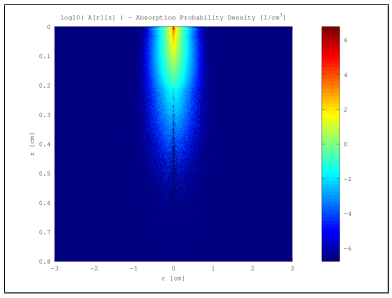
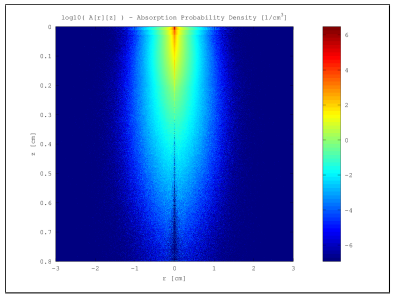
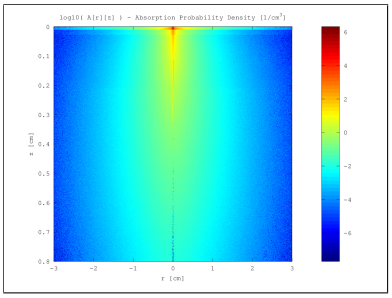


Figure 211: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

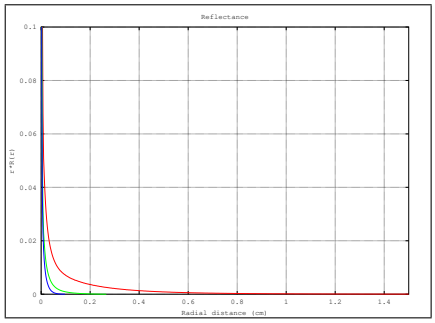


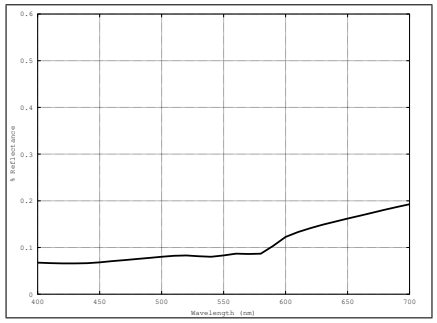




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	121.78	80.404	60.833	57.559	42.64	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 212: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



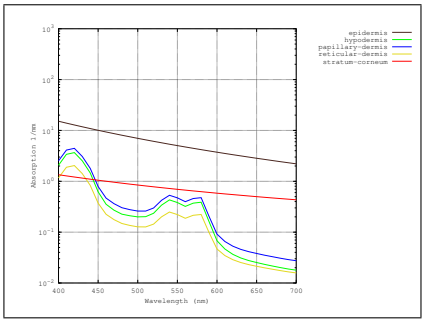


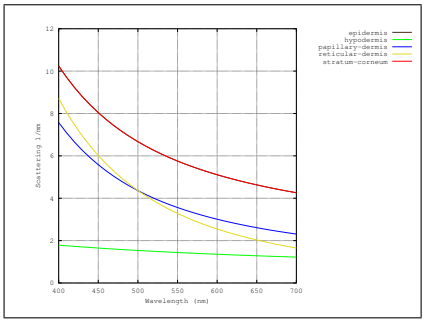
Fitting	R	G	B
w_i	(661.509, 52.997, 4.931, 0.870, 0.121, 0.016)	(390.623, 30.737, 3.308, 1.027, 0.239, 0.026)	(484.162, 178.467, 38.546, 5.213, 1.225, 0.194)
v_i	(0.511, 2.646, 19.666, 125.983, 1041.692, 9151.829)	(0.473, 2.109, 9.090, 31.678, 129.848, 738.863)	(0.278, 0.457, 1.378, 5.330, 20.509, 81.665)
RMS,AMAX	3.68e-13, 2e-04f	5.65e-11, 1e-03f	3.63e-09, 1e-02f

Figure 213: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =0 v_m 7 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	0	7	5	0.05	2.1e-4	0.12802





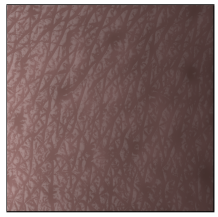
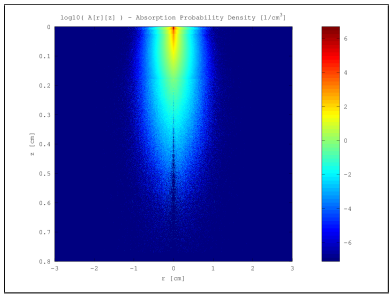
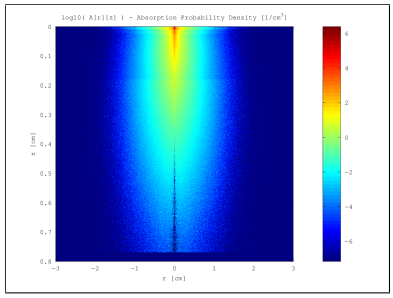
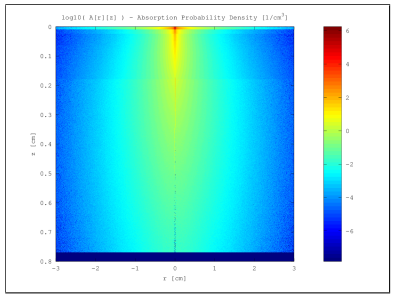


Figure 214: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

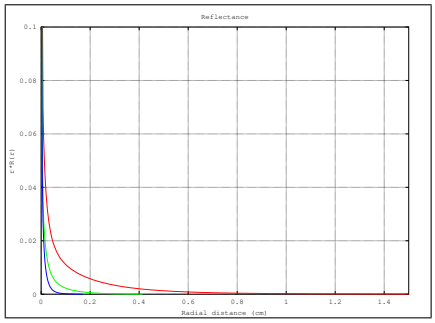


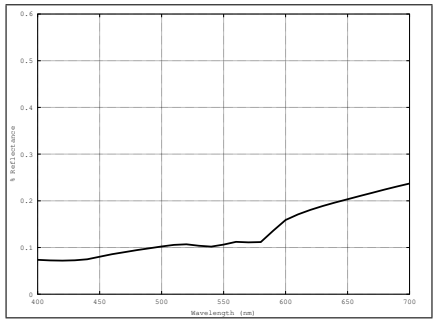




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	100.74	80.404	50.319	57.559	35.273	50.025
Papillary-dermis	0.015295	7.8938	55.809	4.723	35.614	0.65427	29.197
Reticular-dermis	0.15465	3.7192	60.173	2.2155	32.821	0.34621	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 215: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



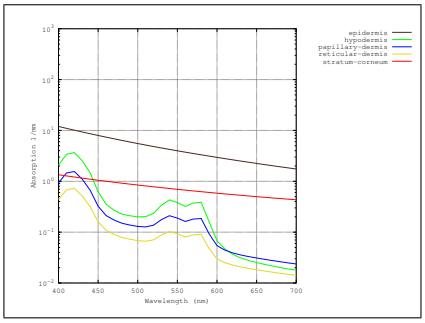


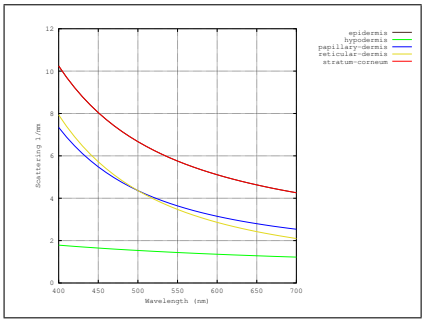
Fitting	R	G	B
w_i	(667.268, 59.608, 5.816, 1.085, 0.182, 0.026)	(399.778, 38.193, 3.895, 0.934, 0.181, 0.025)	(503.526, 99.097, 20.359, 3.560, 0.708, 0.058)
v_i	(0.501, 2.363, 19.065, 131.607, 1083.020, 8815.819)	(0.455, 1.927, 11.182, 51.579, 257.308, 1561.148)	(0.327, 0.705, 2.208, 9.759, 41.697, 213.987)
RMS,AMAX	4.18e-12, 6e-04f	1.58e-12, 2e-04f	1.93e-09, 8e-03f

Figure 216: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =0 v_m 7 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	0	7	5	0.05	2.1e-4	0.18059





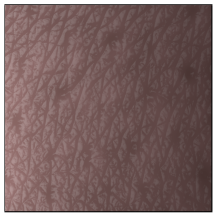
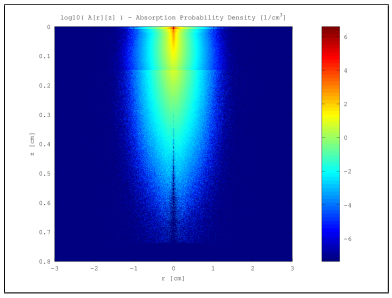
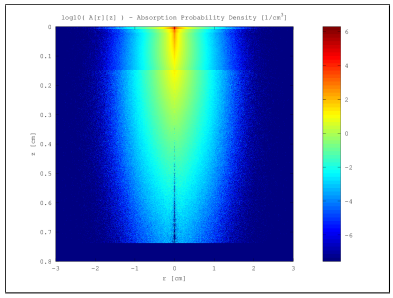
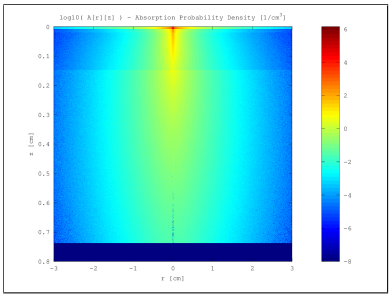


Figure 217: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

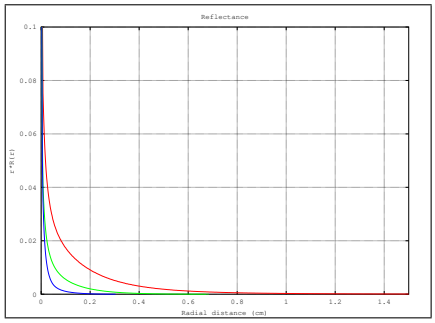


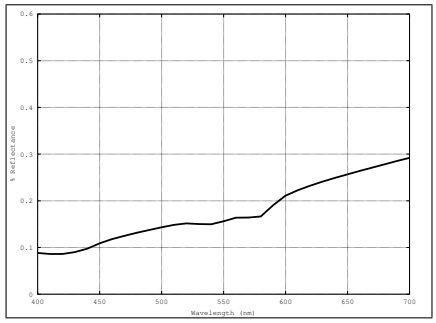




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	79.696	80.404	39.806	57.559	27.905	50.025
Papillary-dermis	0.012592	3.2353	54.81	1.8888	36.388	0.44328	30.688
Reticular-dermis	0.12732	1.6022	57.191	0.92727	34.723	0.25118	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 218: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



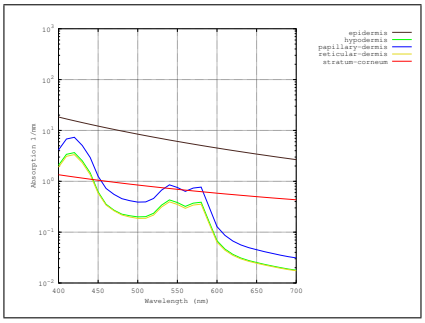


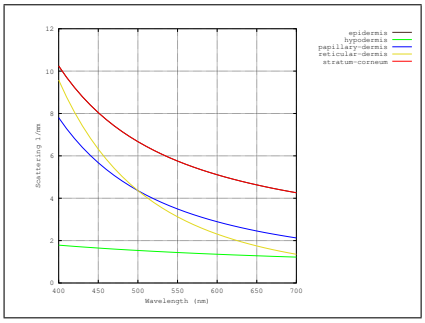
Fitting	R	G	B
w_i	(643.456, 41.186, 5.837, 1.192, 0.248, 0.036)	(377.579, 28.982, 4.026, 0.923, 0.193, 0.031)	(143.992, 102.519, 87.255, 85.045, 5.905, -0.736)
v_i	(0.553, 2.753, 21.863, 159.747, 1244.379, 9010.152)	(0.510, 2.174, 14.060, 78.617, 472.358, 2920.177)	(0.575, 0.500, 0.487, 0.896, 14.277, 0.032)
RMS,AMAX	1.65e-11, 1e-03f	8.52e-12, 5e-04f	1.34e-05, 7e-01f

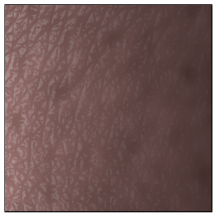
Figure 219: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 30 ξ =1 v_m 7 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	30	1	7	5	0.05	2.1e-4	0.069549







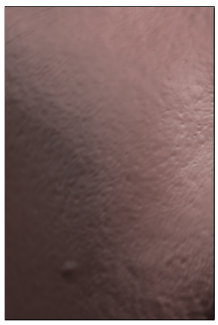
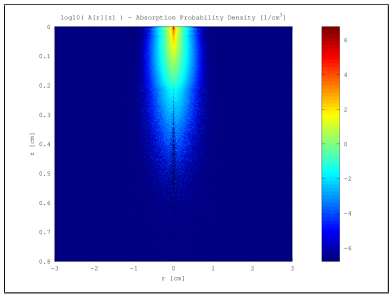
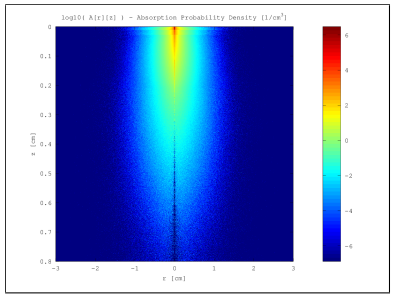
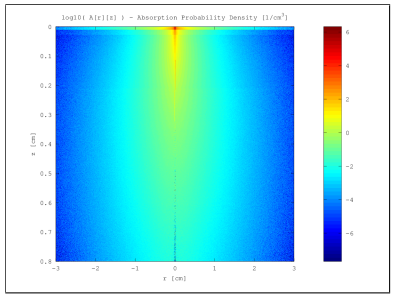


Figure 220: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

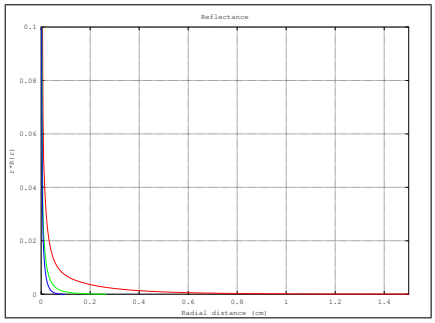


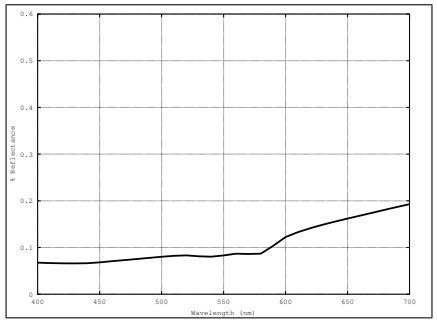




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.008	121.78	80.404	60.833	57.559	42.64	50.025
Papillary-dermis	0.018	12.552	56.75	7.5572	34.934	0.86525	27.931
Reticular-dermis	0.182	5.8362	63.158	3.5037	31.239	0.44123	21.791
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 221: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



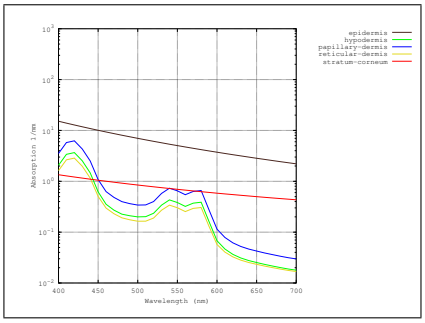


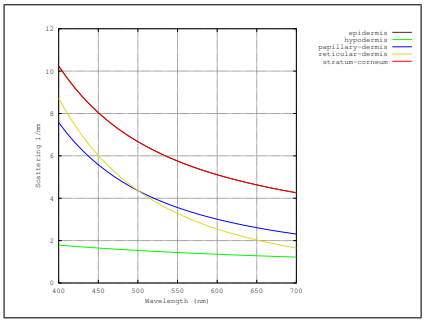
Fitting	R	G	B
w_i	(661.854, 53.815, 4.976, 0.880, 0.123, 0.016)	(391.823, 31.020, 3.249, 0.962, 0.215, 0.024)	(496.064, 161.451, 22.043, 3.764, 0.934, 0.150)
v_i	(0.509, 2.616, 19.470, 124.426, 1028.764, 9080.293)	(0.472, 2.119, 9.546, 34.234, 140.403, 781.266)	(0.283, 0.567, 1.858, 6.882, 24.728, 90.343)
RMS,AMAX	3.16e-13, 2e-04f	1.48e-11, 6e-04f	1.79e-10, 2e-03f

Figure 222: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 55 ξ =1 v_m 7 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	55	1	7	5	0.05	2.1e-4	0.099683





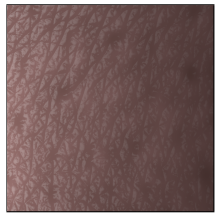
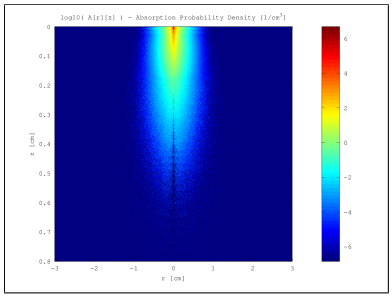
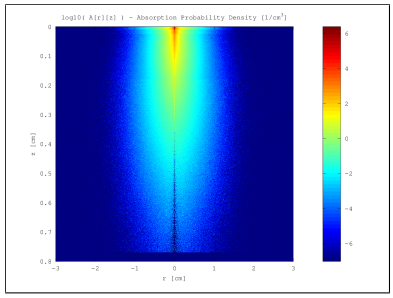
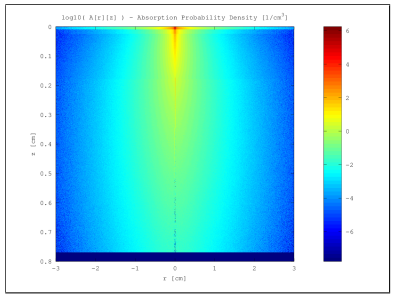


Figure 223: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

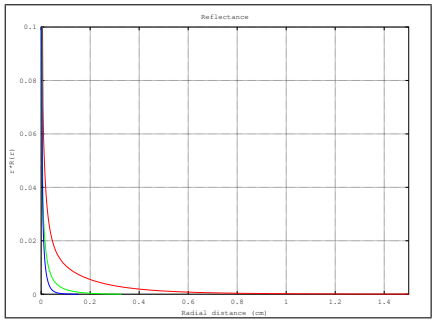


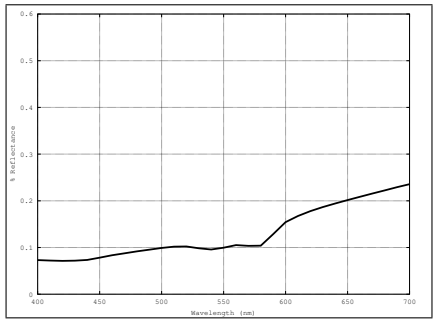




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00686	100.74	80.404	50.319	57.559	35.273	50.025
Papillary-dermis	0.015295	10.805	55.809	6.4944	35.614	0.78613	29.197
Reticular-dermis	0.15465	5.0424	60.173	3.0206	32.821	0.40559	24.301
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 224: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.



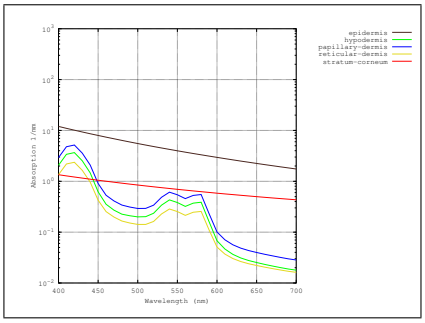


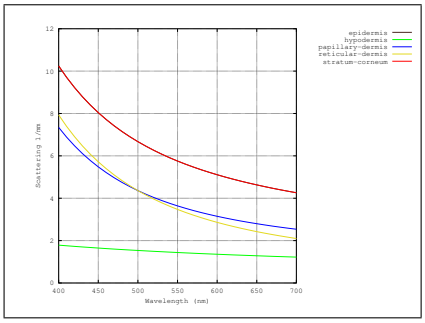
Fitting	R	G	B
w_i	(541.002, 268.010, 56.687, 24.637, 15.159, 2.182)	(434.027, 48.762, 4.422, 1.320, 0.300, 0.038)	(407.049, 216.266, 30.733, 4.445, 0.944, 0.092)
v_i	(0.335, 0.494, 1.213, 0.038, 6.619, 104.127)	(0.403, 1.664, 8.376, 33.161, 154.629, 978.946)	(0.282, 0.509, 1.739, 7.718, 32.545, 153.551)
RMS,AMAX	9.03e-03, 3e+01f	3.80e-10, 3e-03f	5.05e-09, 1e-02f

Figure 225: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.

Female Age 80 ξ =1 v_m 7 v_{Hb} 5

Gender	Age	ξ	v_m	v_{Hb}	c_{bil}	c_{car}	Skin roughness
Female	80	1	7	5	0.05	2.1e-4	0.14797





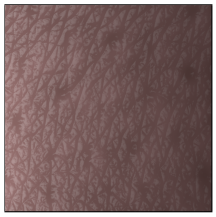
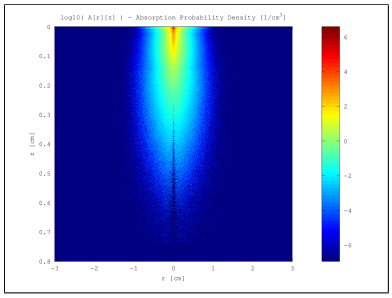
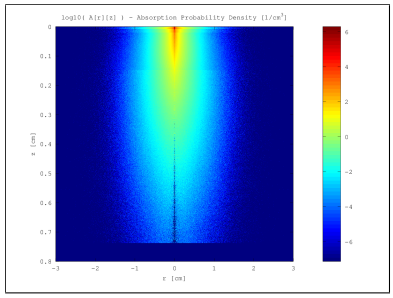
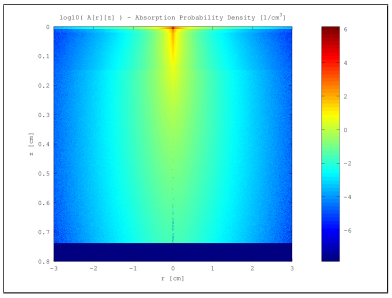


Figure 226: Top row: Full skin phantom description and skin closeup image. Bottom row, from left to right: Absorption and scattering coefficients per-wavelength for each skin layer, and result on a human cheek.

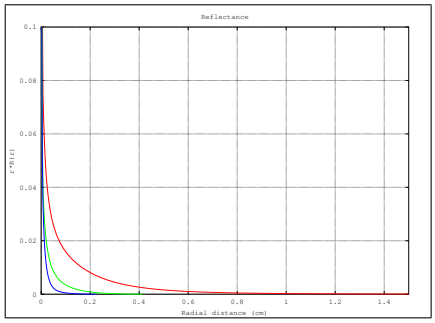


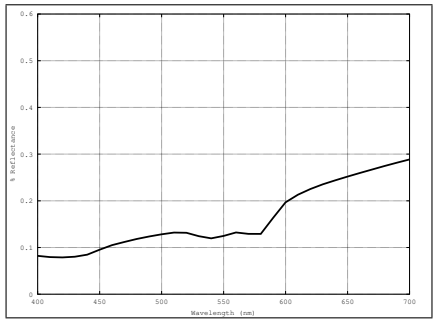




Skin layer	d(cm)	μ_a	μ_s	μ_a	μ_s	μ_a	μ_s
Stratum-corneum	0.002	10.504	80.404	6.9512	57.559	5.6519	50.025
Living epidermis	0.00572	79.696	80.404	39.806	57.559	27.905	50.025
Papillary-dermis	0.012592	9.0584	54.81	5.4315	36.388	0.70701	30.688
Reticular-dermis	0.12732	4.2485	57.191	2.5375	34.723	0.36996	27.631
Hypodermis	0.59	6.1997	16.491	3.8234	14.388	0.46555	13.41

Figure 227: Top row: MonteCarlo simulations for $450nm$, $550nm$ and $610nm$. Bottom row: Resultant optical parameters (d, μ_a, μ'_s) applying our skin aging model.





Fitting	R	G	B
w_i	(646.425, 43.566, 6.029, 1.231, 0.246, 0.035)	(388.003, 36.395, 4.430, 1.130, 0.249, 0.038)	(546.248, 56.760, 6.520, 1.928, 0.400, 0.034)
v_i	(0.547, 2.628, 20.526, 147.515, 1143.189, 8410.081)	(0.477, 1.870, 11.243, 53.752, 269.793, 1536.807)	(0.362, 1.301, 5.552, 19.665, 77.519, 458.327)
RMS,AMAX	1.49e-11, 1e-03f	2.77e-12, 3e-04f	8.58e-11, 2e-03f

Figure 228: Top row: Diffusion profile response for a pencil light-beam. Middle-row: RGB-profiles and reflectance-per-wavelength. Bottom row: Result of fitting the RGB-profile with 6 weighted Gaussians.