

Figure 1 The movement of one photon through a homogenous medium, as calculated by Monte Carlo simulation.

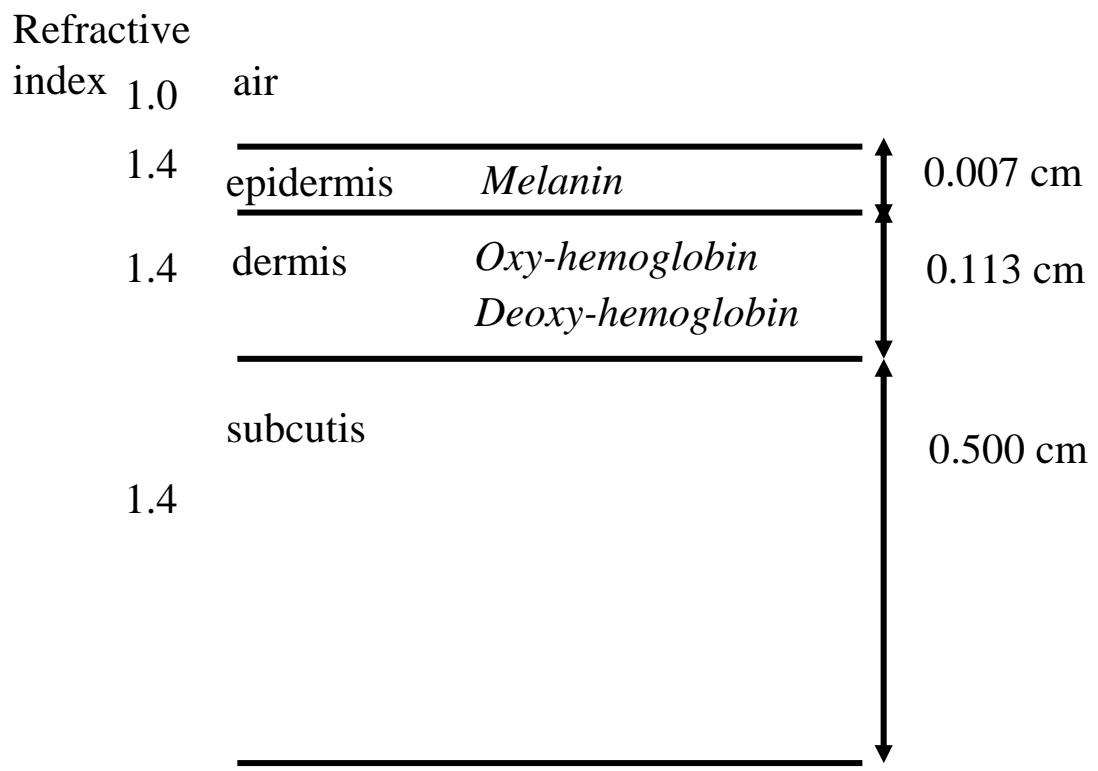


Figure 2 Three layered model of skin

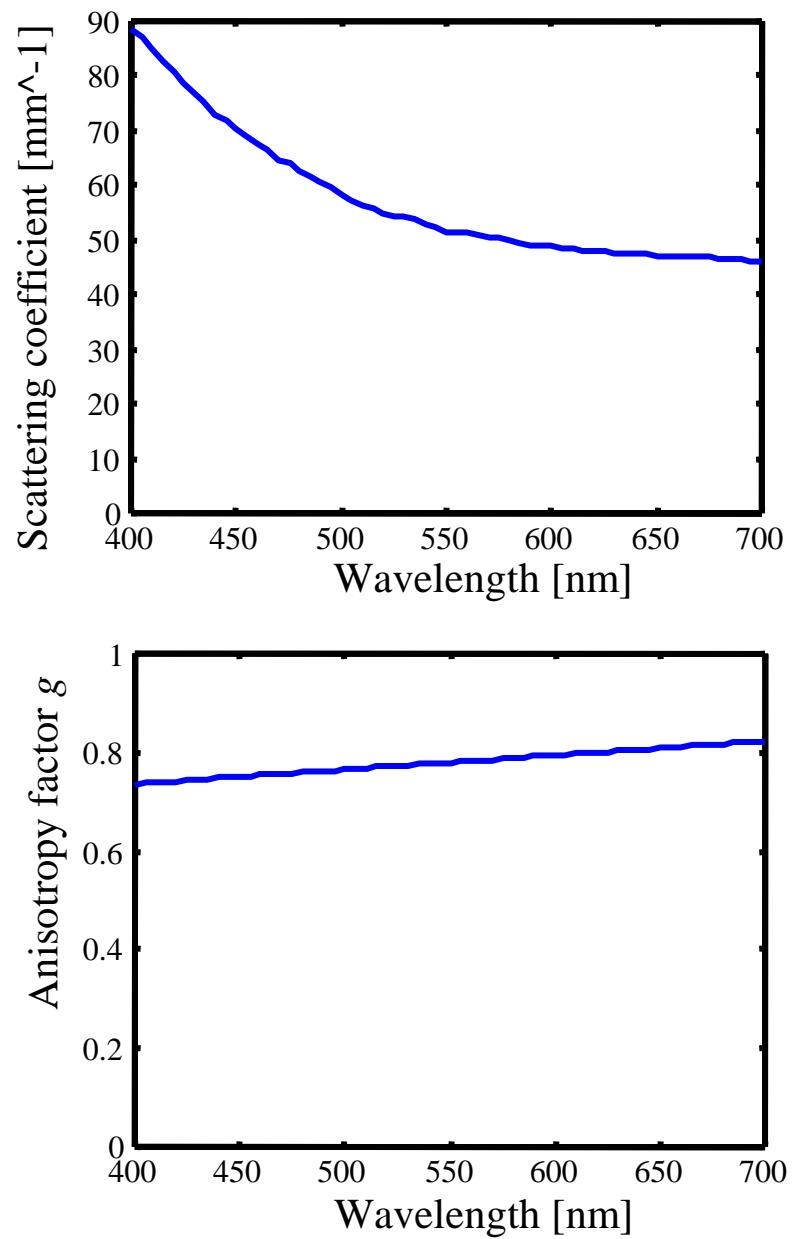


Figure 3 Scattering coefficient and anisotropy factor in epidermis and dermis layer

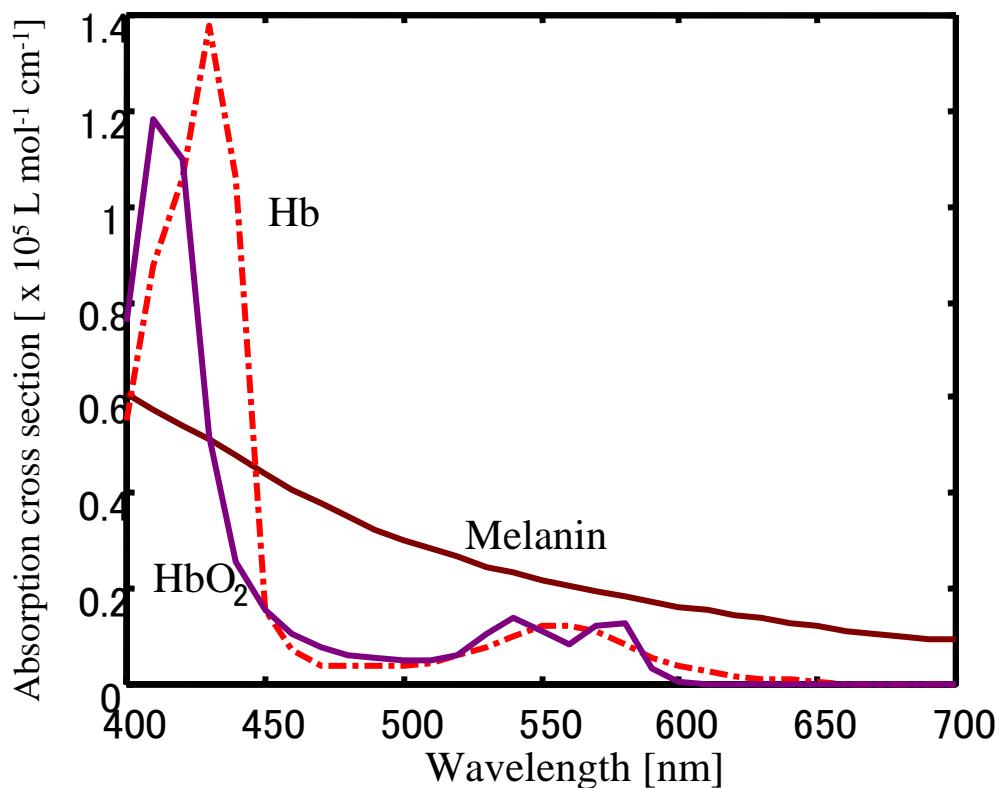


Figure 4 Absorption cross section of Melanin, oxy-hemoglobin ( $\text{HbO}_2$ ), and deoxy-hemoglobin (Hb)

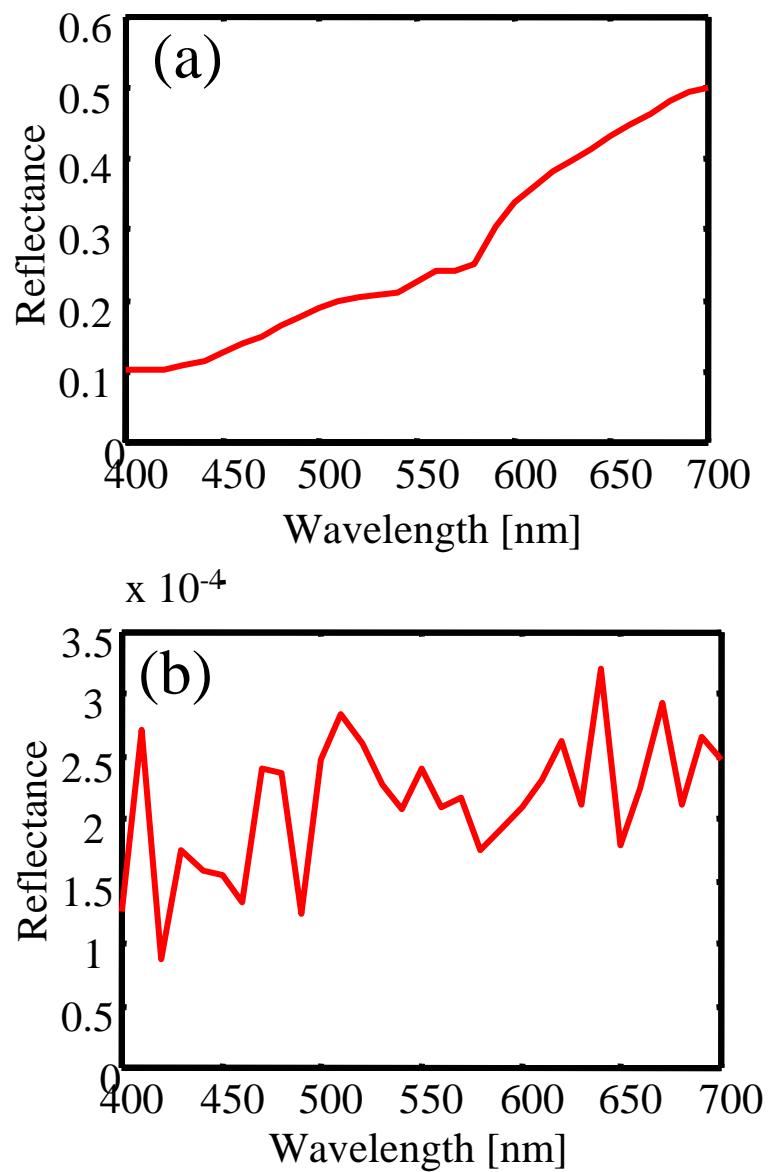
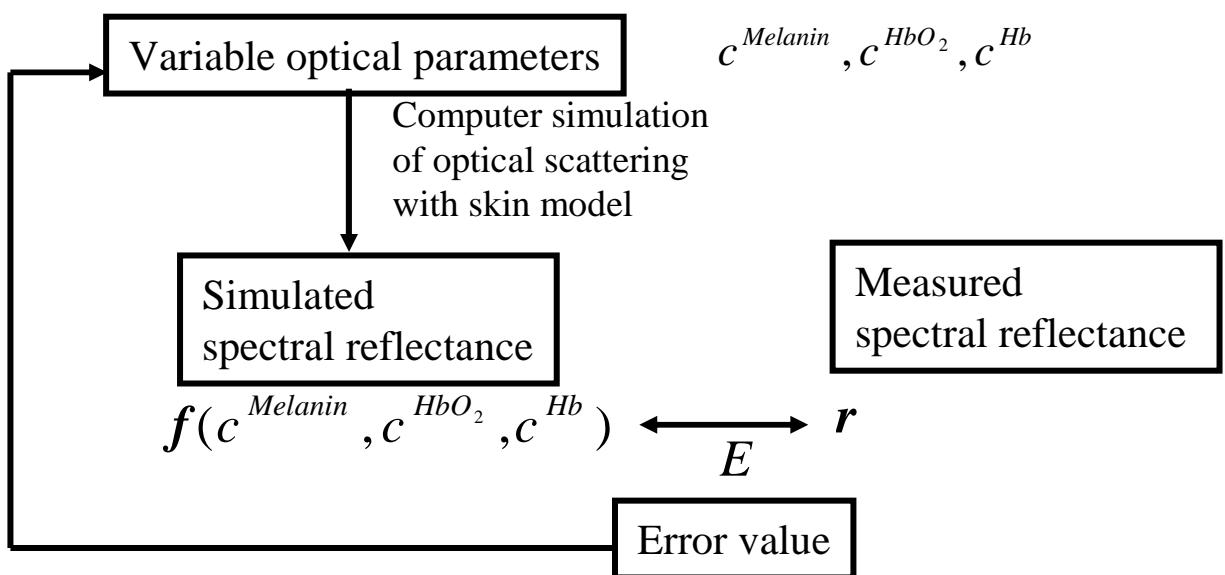


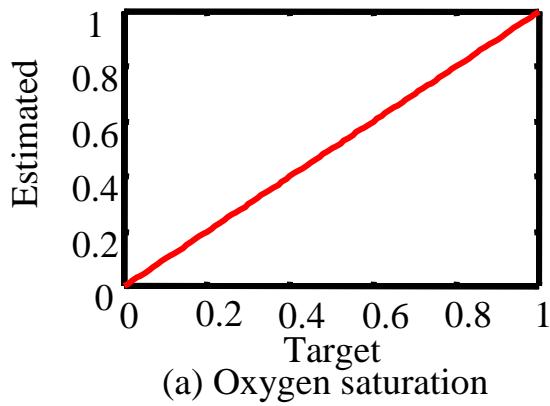
Figure 5 (a)Result of Monte Carlo simulation (b)standard deviation of error in the simulation



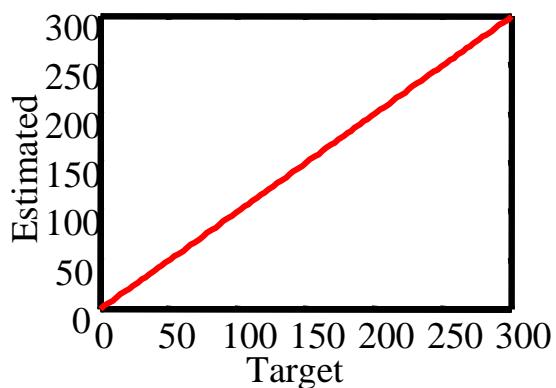
If  $E$  is not minimized, parameters are modified based on optimization technique.

If  $E$  is minimized, the parameters are the estimated parameters.

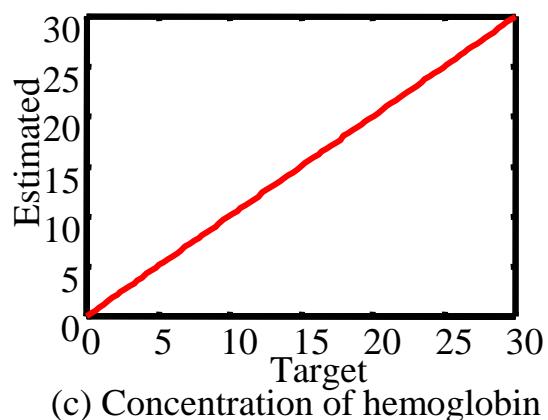
Figure 6 Estimation of concentrations of pigments from diffuse spectral reflectance



(a) Oxygen saturation



(b) Concentration of melanin



(c) Concentration of hemoglobin

Figure 7 Results of estimation of concentrations of pigments from absolute diffuse spectral reflectance

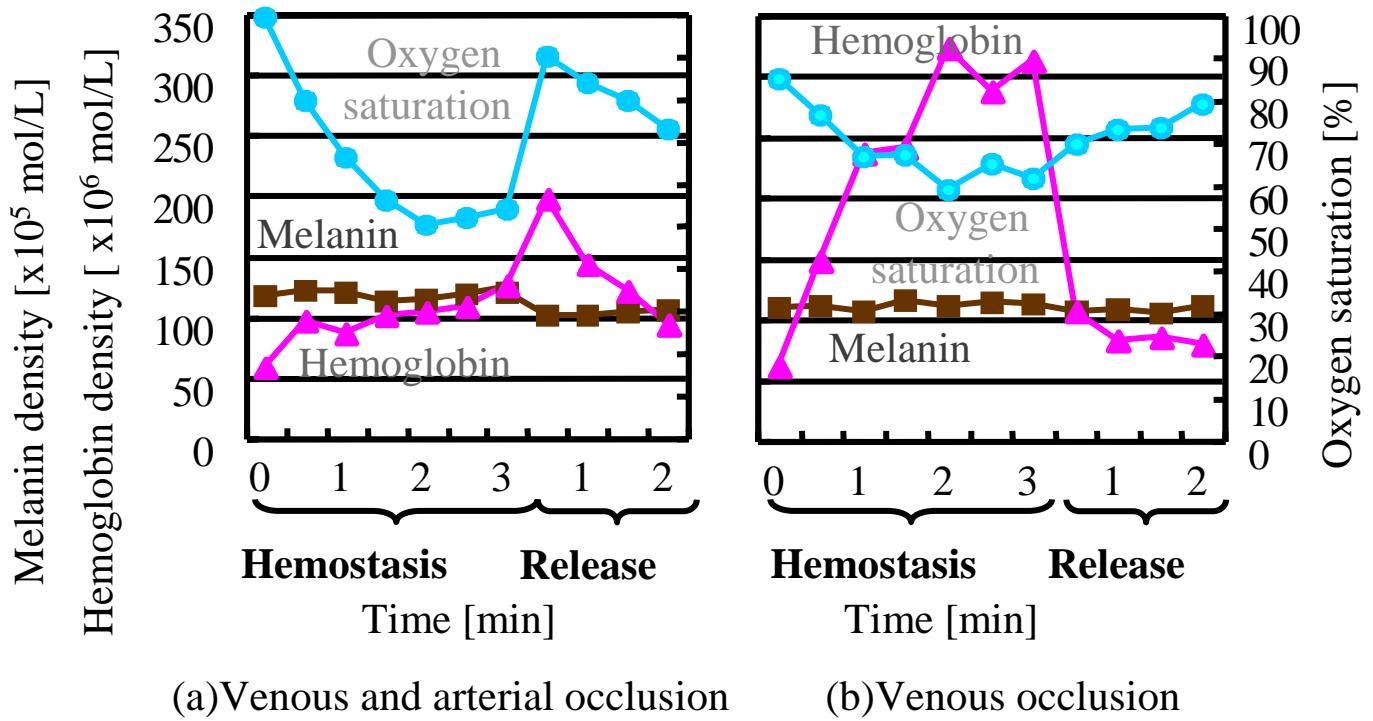


Figure 8 Results of estimation of concentrations of pigments from imaging the human forearm under (a) venous and arterial occlusion, (b) venous occlusion

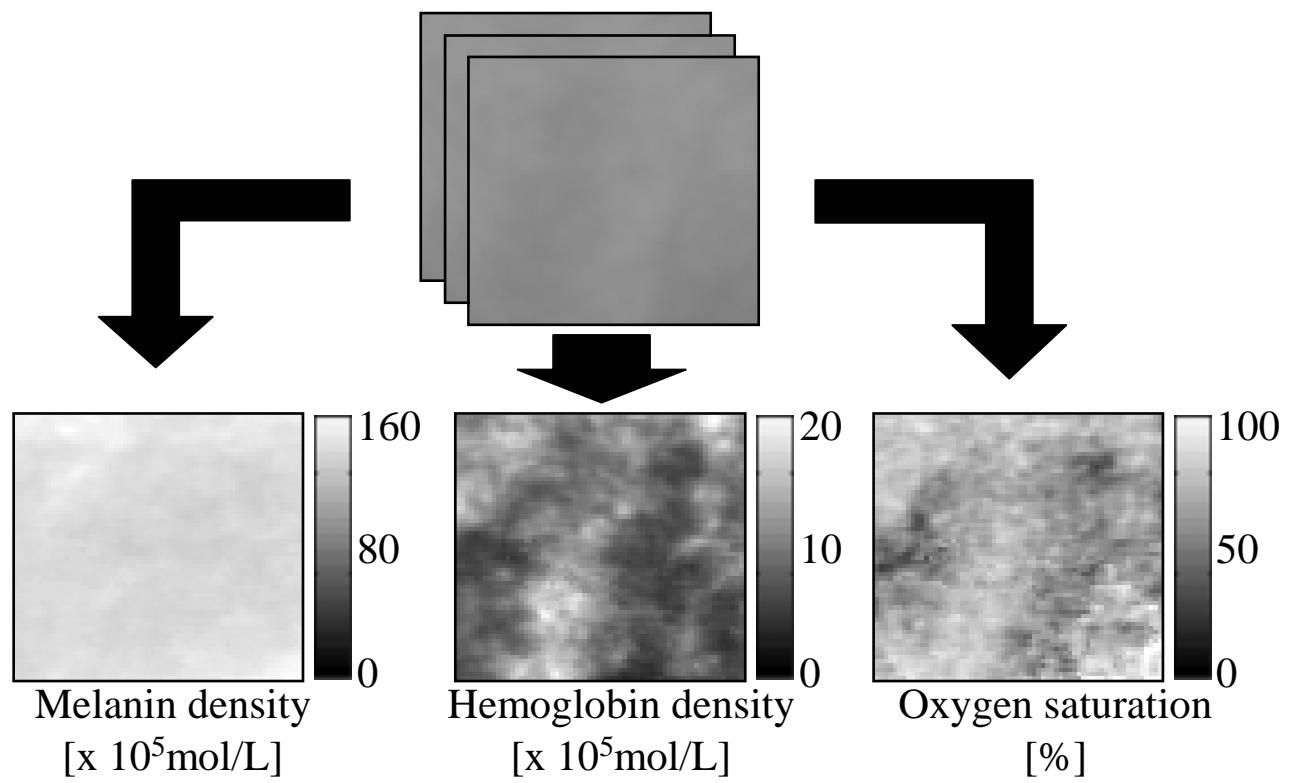


Figure 9 Results of estimation of concentrations of pigments from imaging the slapped region of the human skin.