

Development and characterization of 3D skin tissue models with optical methods

The human skin is one of the most important and the largest organ of the human body. It has the task of protecting from external physical impacts, dangerous microorganisms and is responsible for heat regulation. It is important to keep the skin healthy and hydrated. Moisturized skin is generally regarded as healthy looking and there are corresponding changes in the optical properties when skin isn't hydrated. The appearance of the skin depends on the scattering and absorption of its different layers, mostly on the epidermis.

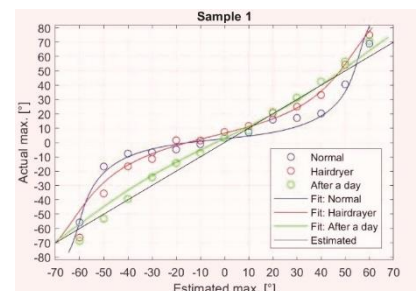
Angle resolved scattering provides a non-invasive solution to measure the scattering and absorption of the skin, which at a later stage could be used to develop a product. The idea was to measure the reflection of fresh and dry skin to investigate how these values correlate with each other.

Another factor which influences the scattering is the roughness of the skin. This can be measured with the help of Optical coherence tomography. The measurements confirm that dry skin shows a significant change in scattering from hydrated skin. The drier the skin less intense the reflection will be.

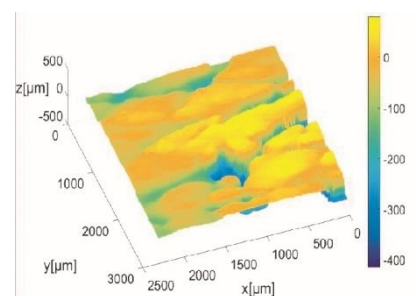


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Maxima compared to the estimated maximum, if total reflection occurs.



Skin surface of our test person (back of hand, 23 years)