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Friedrich-Alexander-Universität
Erlangen-Nürnberg



Seminar über Fragen der Mechanik

zu folgendem Vortrag wird herzlich eingeladen

Montag, **19.11.2012, 14:15 Uhr**, Egerlandstr. 5, Raum 0.044

The detailed structure of human skin layers

Starting point for biomechanical simulations?

Dr. Frank Fischer

Structure Research Lab, Beiersdorf AG, Hamburg

Human skin is a complex material, which exhibits nonlinear stress-strain, anisotropic, and viscoelastic characteristics. In addition, skin in vivo is in tension, which varies according to location, age and person. The measurement of the mechanical properties of skin in vivo is difficult, sufficient knowledge of the mechanical properties of skin is not available. An accurate model of in vivo human skin would be useful in developing strategies for wound healing and cosmetic applications, e.g. anti aging products.

For accurate modeling of skin biomechanics in total the structure of all skin layers has to be considered in microscopic detail. Therefore, the focus of this talk will be a view on the detailed microscopic structures of human skin, from the surface to dermal layers. Starting with the stratum corneum, the cornified envelope, a complex multilayer system can be seen. The vital epidermis, regenerating every 28 days, shows strong mechanical linking between cells and between layers. The basal membrane separating epidermis from dermis allows flexibility to mechanical stress. And, finally the dermis is a complex system of fiber protein meshworks contributing in large amounts to the biomechanical behavior of human skin.

After the talk the main question remains: How can this complex, multilayered system of inhomogeneous mechanical local strengths be simulated in terms of its overall mechanical behavior?

Prof. Dr.-Ing. P. Steinmann
Prof. Dr.-Ing. K. Willner

Lehrstuhl für Technische Mechanik
Egerlandstraße 5, 91058 Erlangen

Prof. Dr.-Ing. S. Leyendecker

Lehrstuhl für Technische Dynamik
Konrad-Zuse-Straße 3-5, 91052 Erlangen