Montanuniversität Leoben

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Chair of Physics

S E M I N A R
on
Semiconductor Physics and Nanotechnology

Mo, 05.10.2026, 11:15 Uhr,

Seminar in
person in the physics lecture hall *or* via Zoom

"Structure and Mechanics of Composites: Strategies of Nature and Engineering"

Univ.-Prof. Mag. Dr. Herwig Peterlik

Faculty Center for Nano Structure Research, Faculty of Physics, University of Vienna, Austria

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The fundamental objective in the structural arrangement of composite components as well in nature and in engineering is the optimization of properties, such as mechanical strength, weight, energy consumption for production and costs in general, to name some out of many. The shared goal is to maximize safety and efficiency. However, where do nature and engineering diverge, where do they align, and what insights can be gained from this comparison?

A core strength of nature lies in its ability to efficiently assemble available materials in a complex, hierarchical manner. Comprehending these building mechanisms requires diverse characterization techniques capable of resolving structural details at each respective hierarchical level.

This presentation highlights several examples of how nature structures composite materials at the nanometer scale and compares them to modern technical materials. Utilizing *in-situ* X-ray scattering, structural properties at the nanoscale can be directly correlated with macroscopic features. Experimental data from everyday biological tissues—specifically tendons, bones, hair, and feathers—will be presented to illustrate these concepts.

Zoom – Link:
https://zoom.us/j/96375934537?pwd=RTlKTWhSdzRHU211YTY1bGFxTUtpZz09
Meeting-ID: 963 7593 4537
Kenncode: =r=4YQ