

KIDS TALK

“Biomimetic imitation of strongly scattering beetle scales”

Speaker: Marie-Christin Angermann, AG von Freymann

Abstract: Due to their inner structure the scales of white beetles - consisting of low refractive index material - are strongly scattering. We want to identify the necessary structure for this.

Therefore we have to understand the mechanism of light scattering within the scales and to develop a model system using tailored disorder. This model system can be evaluated by numerical calculations with finite difference time domain (FDTD).

Using FDTD we have identified a set of parameters for our structure, which shows a backscattering of about 40% in the calculations. For the efficient scattering of this structure, not only physical dimensions are important, but also the rule with which the disorder is introduced to the system. The model system structure is based on a 2 dimensional grid in multiple layers. Already one single layer provides a smooth light distribution in the farfield, with nearly no angle or wavelength dependence. We fabricated one single layer by the means of direct laser writing (DLW) - and it appears white! Currently we are searching for the ideal parameters to fabricate the whole structure via DLW.

With this work the understanding of scattering is increased and the importance of the influence of structure instead of the material is pointed out.



When: Friday, July 21st 2017, 10:00 am

Where: Room 46-387/388

All undergraduate and graduate students as well as postdocs are welcome and encouraged to join our discussion!

***** COFFEE, TEA AND COOKIES WILL BE SERVED *****

For questions, comments or suggestions: cjoerg@physik.uni-kl.de

