

## Seminar im Rahmen des GRK 2078

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Datum: Di., 19.12.2017  
Uhrzeit: 14:00 Uhr

Ort: Geb. 10.23, 3. OG (R 308.1 – KM-Seminarraum)

Titel: **Optical in-situ damage investigation of glass fiber rovings in an epoxy matrix**

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### Abstract

Discontinuous fiber reinforced composites offer great advantages for high-volume lightweight components. The process-dependent microstructure of this class of materials, however, presents a key challenge for modeling the material behavior in numerical simulations, especially in the case where an evolution of microstructure and, thus, the mechanical properties occurs, e.g., formation of cracks or matrix-fiber interface damage. The deviation of a reliable material model for the damage behavior of discontinuous fiber reinforced composites requires an essential understanding of the underlying damage mechanisms. Especially fiber-matrix interface debonding and the fiber breakage itself are of interest.

This talk focuses on the observable damage mechanisms that occur in a single roving embedded into an epoxy matrix. A finite glass fiber roving is, therefore, placed into an epoxy tensile specimen. Several specimens were manufactured with varying orientation of the glass fiber roving with respect to the tensile direction. The fiber-matrix interface debonding and fiber breakage are observed in-situ by a change of the optical properties during the tensile test. The dependence of the damage mechanisms on the load direction with respect to the roving orientation is discussed by still captures and video captures.

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Alle Interessenten sind herzlich eingeladen.  
Prof. Dr.-Ing. Thomas Böhlke