

Seminar im Rahmen des GRK 2078

Referent: **Professor Tim A. Osswald**
Consolidated Papers Foundation Chair, sponsored by the Mead Witter Foundation
Honorary Professor at Friedrich-Alexander-Universität Erlangen-Nürnberg and Universidad Nacional de Colombia,
co-Director of the Polymer Engineering Center,
Mechanical Engineering Department, University of Wisconsin-Madison, U.S.A.

Datum: Fr., 02.06.2017
Uhrzeit: 14:00-15:30 Uhr
Ort: Geb. 10.23, 5.OG, R 504

Titel: **Fiber motion during processing of discontinuous fiber reinforced composites**

Abstract

Experimental and numerical techniques are implemented in order to understand the motion of discontinuous fibers during processing of composites materials. The motion leads to fiber orientation, fiber attrition and fiber density distributions in final parts, which dominate the properties of discontinuous fiber filled composites. Throughout the presentation new measurement procedures to accurately measure fiber orientation, length and density distributions will be presented. Another topic covered is a new particle level simulation model which was developed to predict fiber motion and fiber-fiber interactions during polymer processing. The model provides an alternative to costly and time-consuming experiments for understanding fiber orientation in polymer flows. This simulation couples with the Reduced Strain Closure Folgar-Tucker model (RSC) to describe the orientation evolution and interaction between fibers placed in simple shear and compression flow cells. The particle level simulation results are compared to existing models for predicting the coefficients that describe the model. Furthermore, extensive experimental work is performed to assess the effects of processing conditions on fiber attrition during processing. The particle level simulation is used to understand the physics of fiber breakage and help develop a continuum model to predict fiber attrition. Finally, this talk will present some experimental work that attempts to shed light on fiber-matrix separation effects.

Alle Interessenten sind herzlich eingeladen.

Prof. Dr.-Ing. Frank Henning