

Seminar im Rahmen des GRK 2078

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Datum: Di., 06.02.2018
Uhrzeit: 14:00 Uhr

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

Titel: **Structural Thermoplastic Composites seen by a Glass Fiber Manufacturer**

Abstract

Polymer composites are the key for lightweight construction and enable automotive producer to reduce gas consumption and fulfill governmental requirements. Over the last two decades thermoplastic composites became the major focus of the composites industry due to their unique properties such as toughness and impact resistance paired with excellent weldability and recyclability. Faster cycle times make them very attractive for high volume production.

The properties of structural thermoplastic composites (STPC) are dominated by the fiber and the quality of the fiber matrix interface. Fiber surface chemistry determines not only the bonding to the resin it also has a major influence on the processability of the fiber to a composite part. The bonding of the thermoplastic resins to the glass fibers can be significantly improved by tailoring the fiber glass sizing chemistry resulting in improved composite properties such as strength, impact resistance, aged performance, and dimensional stability. Furthermore, by using a Johns Manville proprietary sizing chemistry, glass fibers possess reactive sites which enable in-situ polymerization of monomers, such as caprolactam, from glass surface; thereby integrating the fiber glass with resin matrix and maximizing the fiber-matrix bonding.

The presentation will focus on the requirements and optimizations of the reinforcing glass fiber needed to obtain a best possible mix of properties and performance in the various manufacturing processes including the traditional approach of using thermoplastic polymer melts to impregnate reinforcing fibrous materials as well as the reactive resin approach using thermoplastic monomers for in-situ polymerization. Over-molding of TP prepregs will be discussed as well.

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