

Invitation to the talk by Dr.-Ing. Tobias Waffenschmidt for the GAMM Junior Research Group

Place: R165 (hybrid)
Zoom [Link](#)
Meeting ID: 912 8608 9015
Passcode: 927062

Date: Thursday, 18th June 2026

Time: 3:30 pm (15:30)

Agenda

TOP 1: Talk by [Dr.-Ing. Tobias Waffenschmidt](#) (see abstract below)

TOP 2: Discussion and Questions

TOP 3: Open Exchange including drinks and food

Abstract

Advanced Material Characterization and Modeling at 3M

Dr.-Ing. Tobias Waffenschmidt - Corporate Research Analytical Laboratory, 3M

Maintaining material integrity and performance throughout a product's service life is essential, particularly under mechanical loads, temperature variation, and diverse environmental conditions. Polymeric materials such as structural adhesives, double-sided tapes, cushioning foams, and thermal barrier materials play a vital role, e.g., in crash performance, vibration mitigation, thermal protection, and overall system durability.

Accurately predicting the mechanical behavior of these materials is therefore critical. However, their highly nonlinear, rate-dependent, and temperature-dependent response poses significant modeling challenges that are often not adequately captured by standard material models.

This talk provides an overview of advanced mechanical testing and modeling approaches for polymeric materials at 3M, including material model calibration and parameter identification through selected use cases. It also presents verification and validation studies that demonstrate the applicability, accuracy, and limitations of these models in practical design scenarios.
