



ADVANCING THERMOPLASTIC COMPOSITE TECHNOLOGIES

The ThermoPlastic composites Research Center (www.tprc.nl) is an open research center for fiber reinforced thermoplastic composites. TPRC performs research in co-operation with national and international partners, such as GKN/Fokker, Toray and Boeing, on the processing and performance of thermoplastic composites. TPRC would like to reinforce its research team with an intern or graduation student on the topic of:

TRANSVERSE BULK VISCOSITY CHARACTERISATION

Project description

The processing of thermoplastic composite materials typically occurs at elevated temperatures, during which the thermoplastic matrix is in a molten state. The processes make use of the flow characteristics of the polymer and reinforcement to produce parts. Typical reinforcement in these composites are uni-directional continuous fibre reinforcements, such as glass or carbon fibres. These are typically tightly packed into so-called tapes in combination with the thermoplastic polymer matrix. The flow of these tapes is typically restricted along the fibre direction, resulting from high viscosities. Therefore many processes may rely on the flow of fibres and matrix transverse to the fibre direction. Modelling of these production processes, therefore, relies on an accurate description of the flow in the transverse direction. Currently, applying the typical characterisation methodology to characterise the transverse bulk (combination of fibre and matrix) viscosity of low-viscosity composites has proven to be challenging.

Tasks

The objective is to identify a correct characterisation methodology for the transverse bulk viscosity of the low-viscosity composite G/PA4.10 and to perform these characterisations. To this extent the following tasks have been divided:

- Perform a literature study on the transverse bulk viscosity characterisation methodologies
- Perform scoping experiments with methodologies that show potential for G/PA4.10
- Select one or more methods and characterise the transverse bulk viscosity of G/PA4.10

Practical information

The project is to be performed within a time frame of six-nine months. You will have a desk at TPRC and receive a monthly trainee remuneration of 250 Euro. Please contact Erik Krämer (erik.kramer@tprc.nl or 0618587793) for additional information.