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 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:

CHARACTERIZATION OF SQUEEZE FLOW IN THE COMPRESSION MOULDING PROCESS

Project description

Thermoplastic composites (TPCs) are increasingly used by the industry due to their exceptional specific mechanical properties and rapid processing capabilities. One advantageous aspect of TPCs lies in the melt-processable nature of the thermoplastic matrix, which enables recycling without separation of the polymer matrix and the fibre. Next to lightweighting, recyclability of TPCs is a key aspect of sustainability. However, recycling of thermoplastic composites is still in its infancy. One of the promising recycling routes relies on compression moulding of either shredded TPC flakes or remoulded extrudates, both obtained from used parts.

In order to design parts using recycled TPC material, it is essential to first understand the processability of the material. Therefore, the deformation and/or flow behaviour during compression moulding needs to be investigated using a custom squeeze flow measurement set-up, available at TPRC.

Tasks for the student

You are asked to perform an experimental study on the flow behavior of TPC flakes. For this purpose, the following tasks have been identified:

- Familiarize yourself with the previous work and literature on this topic.
- Draft a test plan to include the following steps: production of research specimens, squeeze flow experiments, data analysis.
- Execute the test plan: manufacturing of test specimens and performing the experiments
- Analyse and discuss the results on deformation and/or flow behaviour in a written scientific report.

Other 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.