Chair of Carbon Composites
TUM School of Engineering and Design
Technical University of Munich

Term Paper

Characterization of a novel sustainable thermosetting resin

Carbon fiber reinforced polymers (CFRPs) are widely used for their low cost, light weight, and excellent mechanical, thermal, and electrical properties, especially in high-tech applications. However, traditional thermoplastics and thermosets used as matrices are criticized for poor recyclability and environmental impact. Sustainable thermoset resins are considered particularly promising alternatives for replacing the polymer matrix in CFRPs due to their high performance and eco-friendly properties.

I am looking for a motivated student to support me in my research on novel sustainable thermosetting polymers for a wide range of applications. This field of work is highly future-oriented and will enhance our understanding of sustainable materials.

In the advertised project in the form of a semester thesis or in the form of a research internship, a previously newly synthesized biobased polymeric resin is to be characterized with different methods. The main goal is to investigate the changes in material specific properties as a function of the modified synthesis in order to establish a new structure-property relationship for this new class of polymers.

Figure: The new sustainable resin

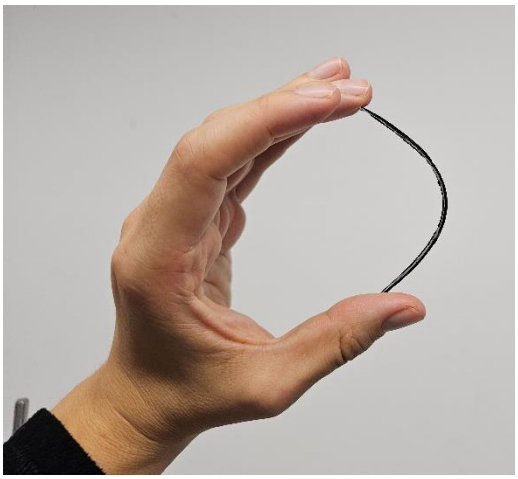

Figure**:** Bending by hand of a cured sample

Tasks

- Thermal Characterization of the polymers by DSC and TGA
- Sample preparation for mechanical characterization: Curing and hot pressing of tensile test specimens
- Mechanical Characterization of the polymers by tensile test or DMA
- Viscosity measurements on a rheometer
- Investigation of crystallinity in the polymer with XRD and DSC
- Evaluation, preparation and documentation of the analytic data

Requirements

- Enthusiasm for advancing the field of sustainable polymers
- Analytical thinking skills
- Flexible time schedule
- Structured and independent way of working
- Experience in dealing with the above-mentioned analytics desirable

Starting date: Now

For more details please contact:
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