

Bachelor's Thesis, Term Paper, Master's Thesis

Process Potentials of Reactive Thermoplastic Resins

Liquid Composite Moulding (LCM) processes for composite parts require resin systems with sufficiently low viscosity to allow proper impregnation of the reinforcement fiber. Typically, this is achieved by using a reactive thermosetting resin system, with inherent challenges regarding reparability and recycling of the matrix materials. Over the last years, reactive thermoplastic resins have emerged that allow the production of thermoplastic matrix composites using LCM processes. These materials also allow new processing routes and variants, e.g. with regard to thermoforming, welding or reparability.

Topic of this thesis is to develop concepts for process route exploiting these potentials and to explore the key process steps experimentally. After a literature review on thermoplastic material processing, different new processing routes should be proposed. The feasibility of the most promising ideas should then be investigated in the workshop.

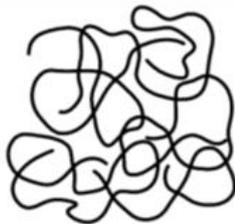


Figure: Structure of an amorphous thermoplastic resin

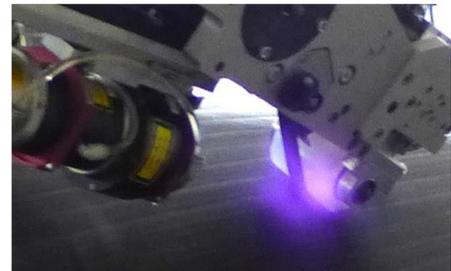


Figure: Thermoplastic Automated Fiber Placement

Research focus of the thesis

- Literature review on processing of conventional and reactive thermoplastic resins
- Concept development for new processing routes for reactive thermoplastic resins
- Experimental evaluation of promising process routes
- Documentation

Requirements

- Interest and general understanding of composite production processes
- Interest in concept development and thinking outside the box
- Interest in experimental work
- Organized and thorough working style

Note: Please expect a reply only after 20th April 2026.

Starting date: End of April 2026

For more details please contact:

Leo Körber, M.Sc., Room MW1440, FSZ, Tel. +49 89 / 289 - 10317, leo.koerber@tum.de