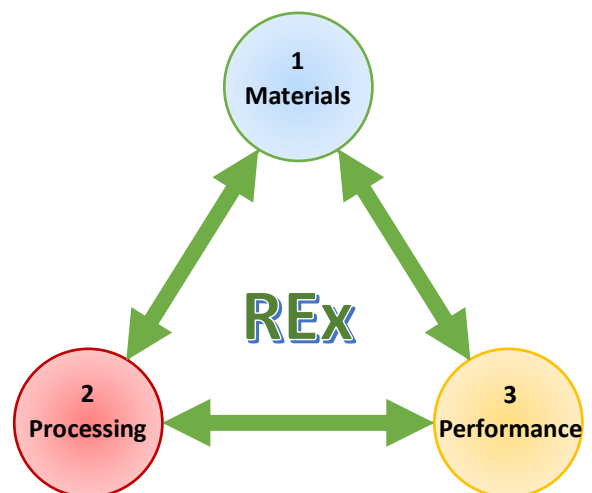
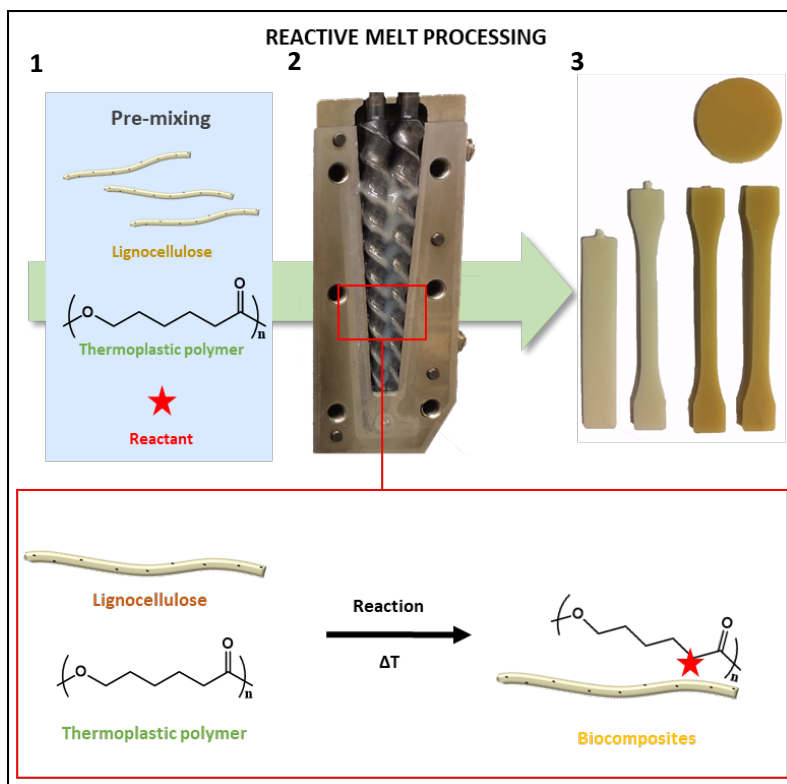


Lignocellulosic sustainable bionanocomposites: from interface design toward new reactive melt processing approaches

MSc thesis proposal (30/60 credits)

BACKGROUND

In the frame of new sustainable nanomaterials research, incorporation strategies for natural lignocellulosic nanofillers in thermoplastics aiming improved and controlled bionanocomposites performance are still a challenge. Research activities are focused on the design of suitable nanocellulose/thermoplastic matrices interfaces for an effective stress transfer. Among all available methods, **reactive extrusion (REx)** represents a unique tool to manufacture bionanocomposites in a green and cost-effective way. Nowadays, REx is recknown as a sustainable alternative to the traditional melt processing approaches for the one-step production of biocomposites.



AIMS AND OBJECTIVES

In the frame of Materials Science forefront research, the ambition of this Master thesis project is the controlled sustainable nanostructured materials preparation by REx and the mechanical, thermal and rheological characterization of the final products. The final goal is the control of interface for the successful dispersion of wood-based nanomaterials in thermoplastics, in order to improve composite performance and *to identify sustainable alternatives for the replacement of the traditional oil-based plastics*. This MSC is inline with Treearch network (<https://treearch.se>)

Student background

This project is suitable for one or two master students who are interested in an interdisciplinary study merging chemistry, chemical engineering and materials engineering. Polymer synthesis and melt processing experience are highly valued.

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