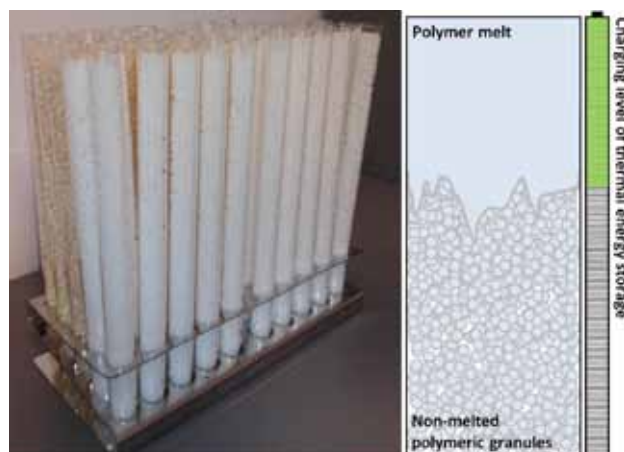


Polymeric latent heat storages

Evaluation and development of polymeric phase change materials for thermal energy storage.

Thermal energy storages are a key technology for the large scale integration of fluctuating renewable sources as well as for increasing the energy efficiency of industries and communities. During the phase transition the temperature of the storage medium remains approximately constant and the high enthalpies lead to high storage capacity. The project aims at developing large-scale, high-performance, and cost-efficient latent energy storage using polymeric materials as phase change materials (PCM). The main focus is on evaluation, modification, development and optimization of appropriate semi-crystalline polymers, which are suited as PCM in terms of storage capacity and efficiency (e.g. phase change temperature, thermal conductivity), as well as long-term stability and price.



Thermal energy storage at lab scale and charging level of thermal energy storage



Polymeric thermal energy storage material containing different fillers

Candidate polymeric classes include polyethylene, polypropylene, polyamides, polyoxymethylene, and polyethylene glycol. Varying additives are used to raise thermal conductivity and polymer stability.

Project

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Helena Weingrill

Chair of Material Science
and Testing of Polymers
Chair of Polymer Processing
helena.weingrill@unileoben.ac.at
kunststofftechnik.at

Personal Data:

2009-2014: Studies of polymer science
2012: 5 months at ECPM in Strasbourg, France
since 2015: PhD student

Research Partners:



Research Focus:

Thermal properties of polymers and composites
Morphology and structure analysis focusing on crystallization behavior