Multi-scale identification of key parameters in wetting phenomena for composite processing and interface properties

Seminar Room - Polo Fabio Ferrari 2, via Sommarive 9, Trento
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Speaker
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With the increased use of Liquid Composite Molding (LCM) processes for composite manufacturing in the transportation industry, the complexity of parts and quality requirements have increased tremendously. Those effective and low cost processes are thus an interesting way to manufacture high performance composites or with bio-based reinforcements.

Void minimization in composites manufactured by LCM calls for an improved understanding of local wetting. Flax fibers are usually considered as adequate bio-reinforcements for composites but their hydrophilic character makes them sensitive to moisture sorption and difficult to wet by hydrophobic resins.

Local wetting properties affecting voids formation can be controlled through fiber treatment. Wetting parameters were determined for untreated and treated flax reinforcements at different scales of study. Some issues about the application of existing laws of dynamic wetting for molten polymers will be also discussed.

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