

Defence of a Doctoral Thesis

Foam-formed Fiber Networks: Manufacturing, Characterization and Numerical Modeling

With a Note on the Orientation Behavior of Rod-like Particles in Newtonian Fluids

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Abstract

Fiber network is a ubiquitous structure that is seen both in industrial materials (paper and nonwoven), and also in biological materials (plant cells and animal tissues). Nature intricately manipulates the network structures by varying density, aggregation, and fiber orientation, to create a variety of functionalities.

In conventional papermaking, fibrous materials are dispersed in water to form a sheet of highly oriented two-dimensional (2D) network. In such a structure, the in-plane mechanical and transport properties are very different from those in the out-of-plane direction. A three-dimensional (3D) network, however, may offer unique properties not seen in conventional paper products.

Foam, i.e., a dispersed system of gas and liquid, is widely used as the suspending medium in different industries. Recently, foam forming was studied extensively to develop the understanding of foam-fiber interactions in order to find potential applications of this technology in papermaking. **Read the whole abstract on www.miun.se/fscn**



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