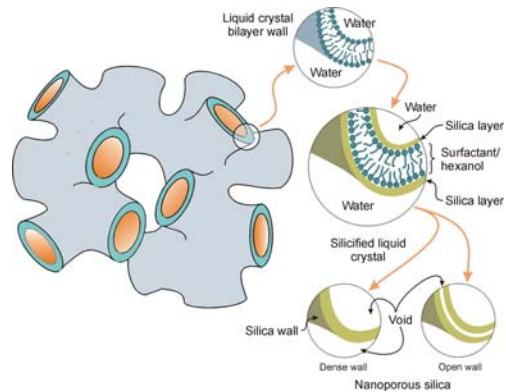


Polymer/ L_3 – Templated Silica Nanocomposites



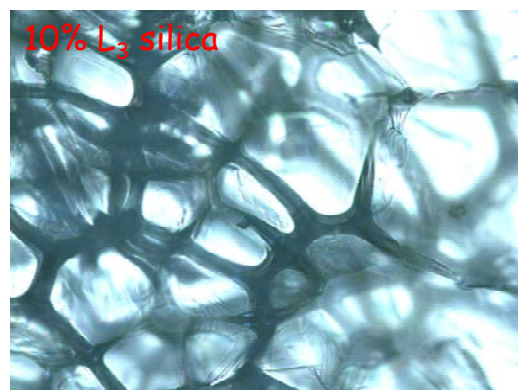
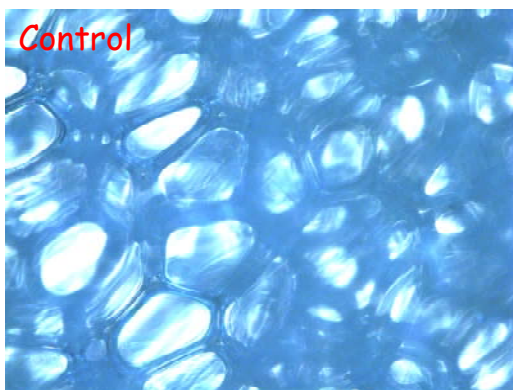
Overview

A novel route to the development of highly porous silica materials has been developed. This approach, L_3 – templating, produces a functional structure, shown at top right, that provides a highly necked structure that facilitates infiltration of monomer solutions and provides an optimum oxide content for the maintaining both structural integrity and channel access.

Progress

The research team, see contacts below, has identified a diversity of applications ranging from holographic imaging to urethane foam processing. The foam processing, for example, enables high efficiency insulation to be manufactured for consumer appliances as well as industrial applications. The technology permits increased foam structure and void volume which translates into reduced thermal conductivity and greater material yield while retaining mechanical properties of the insulation. Properties of the silica/urethane blend are similar to silica aerogel without requiring supercritical extraction. This effort is in collaboration with partner Arçelik A.Ş.

Figure: Enhanced effectiveness in manufacture of urethane foam with 10% L_3 silica. Note cell structure and reduced wall thickness.



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