

Phase transformation in soft materials

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<https://njit.webex.com/njit/j.php?MTID=m2bc09b4dec11c2b855f75f9ee363c439>

Abstract: I will talk about two seemingly unconnected topics, which actually have strong conceptual links. Firstly, I will discuss how growing ice into soft materials causes damage: for example in cryopreservation, or in the process of frost heave. It is commonly believed that this damage is due to the expansion of ice upon freezing, but this often plays only a minor role. I'll show how we are measuring the stresses generated during freezing at the micron-scale, and describe how this is caused by cryosuction — the major effect that underlies freezing-induced damage. Secondly, I will discuss how controlled phase separation can be used to generate vibrant structural colours, but how this is very hard to control for practical usage. We have shown that we can completely change this by performing the phase separation in soft, polymeric solids. Then the mechanical properties of the soft solid couple to the phase separation process, giving very different results.

Speaker

Robert

Style

Material

Science

ETH Zurich