

Liquid crystals at a stretch!
Understanding soft elasticity in 3-D

Prof Helen Gleeson

Dr Johan Mattsson

If liquid crystals are made into elastomers (stretchable polymer materials), an amazing property known as soft elasticity occurs. This phenomenon is essentially one whereby it costs no energy for the system to stretch in a direction perpendicular to the liquid crystal director (the average direction of molecular orientation). Such behaviour can result in some remarkable shape changes in 3-D.

This project will explore the physics underlying such systems. We will carry out experimental investigations to allow us to understand the mechanisms of deformation in bulk systems.

We will also investigate novel 'combined' systems, including dopants such as quantum dots, towards new phenomena.