Liquid Crystals and their Phase Transitions

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Liquid crystals are a fascinating class of phases. Not only are they a toy box for condensed matter physicists; they are also ubiquitous in technology, particularly in liquid crystal displays (LCDs). In this talk I will introduce liquid crystals and discuss the various types of order of different phases. I will also discuss their phase transitions and the behavior of the order parameters at these transitions.

The talk's main focus will be an exciting new type of "de Vries" liquid crystal, currently the subject of much experimental research. I will introduce the properties of de Vries liquid crystals, which are both unusual and technologically promising. I will then discuss a theoretical model that captures and explains the main features of these de Vries liquid crystals.

BIOGRAPHY
Karl Saunders obtained his B.Sc., degree in Applied Physics from Dublin City University in Ireland in 1996 and his Ph.D. in Physics from the University of Oregon in 2001. He completed a Postdoctoral Fellowship at Syracuse University in 2003, and then went on to work as a Physics Lecturer at Dublin Institute of Technology in 2004. Prof. Saunders joined the faculty at Cal Poly San Luis Obispo in 2005 as an Assistant Prof. in the Physics Department where he currently teaches.