



SCHOOL OF CHEMISTRY SCHOOL SEMINAR

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DISCOTIC LIQUID CRYSTALLINE NANOCOMPOSITES

The unique geometry of columnar mesophase formed by disk-shaped molecules is of great importance to study the one-dimensional charge and energy migration in organized systems. There are a number of potential applications of these materials such as one-dimensional conductor, photoconductor, photovoltaic solar cells, light emitting diodes and gas sensors. As the conductivity along the columns in columnar mesophases has been reported to be several orders of magnitude greater than in perpendicular direction, the columns may be described as molecular wires.

On the other hand, the past decade has witnessed an explosive development in the fields of nanostructured materials, such as gold nanoparticles, quantum dots, carbon nanotubes and graphene, due to their technological and fundamental interest. Functionalization of such nanomaterials with mesogens and their incorporation in the supramolecular order of liquid crystals is not only of basic science interest but also lead to novel materials for many device applications.

In this talk, the design, synthesis and characterization of some electron-rich and electron-deficient discotic liquid crystals; synthesis, characterization and mesomorphic properties of functionalized nanoparticles and their insertion in the supramolecular order of discotic liquid crystals will be presented.

HAWORTH 203

FRIDAY, 26TH OCT 2012

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Host: Dr E Baranoff