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ΘΕΜΑ: **Discotic Liquid Crystals based on Graphenes - Thermodynamics and dynamics**

ΤΟΠΟΣ: Αίθουσα Σεμιναρίων ITE/ΕΙΧΗΜΥΘ

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ΩΡΑ: **13:00**

ΠΕΡΙΛΗΨΗ:

Discotic liquid crystals, with potential applications in electronic devices, are materials where self-assembly is driven by non-covalent intermolecular interactions. These materials consist of a flat and rigid aromatic core substituted by flexible aliphatic side chains. The former is responsible for the π -stacking and the latter for the increased solubility, processability and rich thermotropic behavior. During the self-organization process, the disk-shaped molecules organize into columns that further assemble into two-dimensional arrays whereas the alkyl chains fill the intercolumnar space giving rise to a nanophase separated state. Typical examples of these materials are the triphenylene and hexa-peri-hexabenzocoronene (HBC) derivatives. Highly ordered columnar structures of the latter were found to be very promising as active semiconductors in organic field-effect transistors and photovoltaic devices.

In this talk I will review some recent work in understanding the thermodynamics and dynamics of nanographenes. The aim is to (i) obtain an understanding of the factors that influence the delicate self-assembly, (ii) to clarify the origin of the multiple glass temperatures, (iii) to construct the first phase diagrams for substances of this kind and (iv) to study the kinetics of structure formation by following different thermodynamic paths.