



Namur Institute of Structured Matter



UNIVERSITÉ
DE NAMUR

Seminar

Prof. Marc Gingras

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« Twisting Molecules Toward Chirality: Helicenes and Nanographenes with Record Distortions »

When and where:

Wednesday February 26th 2020 at 17:00
UNamur, Rue Grafé 2, B-5000 Namur
Chemistry & Physics building
Room CH22 (2nd floor)

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Helicenes are part of a chiral family of helicoidal molecules known for over 110 years with a rich history. They were considered as an intellectual curiosity for several decades because of their distorted p-system, and a few mythic syntheses. Their attractiveness is not only due to their challenging syntheses, but also to their exalted chiroptical, electronic and supramolecular properties. They recently became the center of newly expanding research topics in the fields of asymmetric catalysis, advanced materials (dendrimers, conductors, polymers, liquid crystals, SAMs, films), molecular electronics, optics (e.g. OLED, chiroptical switches, NLO) and supramolecular helicoidal assemblies, such as twisted wires and foldamers. Tailor-made helicenes are thus needed on a large scale. Following this trend, benzylic-type couplings allow a scalable production of helicenes in good to high yields with possible derivatization using metal-catalyzed reactions. Some applications such as nc-AFM adsorption studies of helicenes on metal surfaces and on insulators led to the concept of “charge-matching” of molecules with ionic solids. Supramolecular p-p interactions studies and diastereoselective formation of triple-fused helicenes embedding six helicene units were reported among the first stable chiral nanographenes with a record molecular distortion of a benzene ring, with bond length alternation (Kekulé), and calculations on local aromaticity of each ring.