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### Sulfur-rich polyaromatic architectures: asterisks, dendrimers, polymers, and their metal interactions


Sulfur-rich polyaromatic architectures of various topologies will be presented, along with their synthesis, their opto-electronic properties and some applications in chemical-biology, in materials science and in nanoscience. They comprise asterisks, dendrimers, polymers and helicenes, which often incorporate a thiophenylene or a polyaromatic unit, leading to some molecular rigidity and restricted degrees of freedom. They represent an underexploited class of macromolecules with multivalent and attractive features for exalting supramolecular interactions, chiroptical and electronic properties. The latter features could be modulated from the coordination of divalent sulfur atoms to thiophilic metallic species, from some cation- $\pi$  interactions, and from some  $\pi$ - $\pi$  complexes. Additionally, polysulfuration often enhances some electronic, photophysical and biophysical properties, leading to exalted luminescence, stable redox states, metal-ion coordination ability, aggregation

or crystallization-induced phosphorescence or fluorescence emission (AIE or CIE). Some uses will be presented as asymmetric catalysts, as some of the most phosphorescent organic (nano)crystals ( $\pi$ ~100%), as cation-selective membranes, as cations/anions sensors (dual mode), as electrochromic molecular switches, as multivalent glycosylated biosensors, and as ligands for stabilizing metal alloys and bimetallic core-shell nanoparticles.

### Biography

Marc Gingras chemistry at the University of Sherbrooke (1981-84). From 1985-89, he completed Doctorate at McGill University with Professor T H Chan and David N Harpp. He worked with Professor Edwin Vedejs (1989-92) and with Professor Laura Kiessling (1992-93) at the University of Wisconsin Madison. He then joined the Laboratory of Supramolecular Chemistry at the University of Strasbourg with Professor Jean Marie Lehn (1993-95). He occupied several faculty positions: Université Libre de Bruxelles (1995-99), University of Nice (1999-2007), and Aix-Marseille Université at the Interdisciplinary Center on Nanoscience of Marseille. He was Chairman of the Chemistry Department (2010-11). He guided 80 research trainees. He has a list of more 62 publications (~2000 cit.), 115 invited lectures and 30 short ones. He is a Board Member of Austin Journal of Biosensors and Bioelectronics, and a former one of the *Journal of Sulfur Chemistry* (2010-14) and *ISRN Organic Chemistry* (2010-12).

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