

Department of Chemistry

Departmental Seminar Series: Physical Chemistry Month

You are cordially invited to a face-to-face lecture presented by



Prof. Melanie Rademeyer

Department of Chemistry, University of Pretoria

Date: Friday, 17 March 2023
Time: 11:30
Venue: The Orbital (Room 3-1 Chemistry Building)

Versatile organic-inorganic hybrid materials: structures and properties

Melanie Rademeyer, Parveen Beebeejaun, Rudolph Erasmus, Hendrik van der Poll

An organic-inorganic hybrid material combines an organic- and inorganic component at the nano-scale, offering the opportunity to merge the properties of the components into a single material that typically retains the properties of the individual components. The components are selected in such a way as to impart specific properties to the hybrid material, to allow for the design of materials with desired properties. The organic component may template the inorganic sub-structure, and can impart optical and electronic properties to the material, while the inorganic component can provide hardness, magnetic properties and optical properties.

Our research focusses on organic-inorganic hybrid materials formed through the combination of organic amines or amides and metal halides. These materials exhibit a variety of structural types, including halide-bridged polymers, metal organic frameworks and perovskites. Since the material properties also depend on the structure, and specifically the dimensionality of the inorganic substructure, engineering of the structure of an organic-inorganic hybrid is key to designing a material with specific properties. Thus, understanding structure-property relationships in these different types of hybrid materials is crucial.

An overview of two families of organic-inorganic hybrid compounds studied in our research group will be presented, with structural trends highlighted. In addition, the relationship between structure and properties, for example fluorescence or band gap, will be discussed.

Contact person:

E-mail: madelien.wooding@up.ac.za