



## ***Symposium M : Perovskite-based nanostructures: synthesis, characterization and applications***

### **Scope of the Symposium**

Perovskite-based nanostructures rapidly evolved to a hot topic in the nanomaterials community over the last few years due to their remarkable optoelectronic properties. They present highly stable structure, that accommodate a large number of compounds; additionally, when compared with their traditional semiconductor nanocrystal counterparts, these materials offer high photoluminescence quantum yields, very rapid carrier dynamics, and high tolerance to surface defects. These properties promoted this class of materials as prime candidates in light and photovoltaic applications. The novelty of such materials is accompanied by a plethora of challenges in their preparation and characterization: they tend to be sensitive to air and humidity, requiring extra steps in the fabrication environment and nanostructure encapsulation; Their tetragonal and orthorhombic crystal lattice render unusually intricate symmetries for nanomaterials, reflecting in the difficulty on interpreting and simulating their electronic dynamics, level structure and optical features. These challenges generate intense discussion in the literature with a still steep growth tendency in publication, expressing the relevance of this hot topic. The importance of Perovskite-based nanostructures in current material science is plenty to have a symposium at B-MRS + IUMRS devoted to it. Such symposium will discuss the latest advances on the synthesis of novel perovskite-based nanostructures, their optical, magnetic, structural, and electronic characterization/properties, and applications, considering innovative device architectures.

### **Abstracts will be solicited in (but not limited to) the following areas**

- *Synthesis of perovskite-based nanomaterials (hybrid or all inorganic)*
- *Hybrid material nanostructures*
- *Optical characterization, spectroscopy, non-linear optical properties*
- *Structural characterization and changes of such due to temperature, pressure, and environmental variations*
- *Structural stability studies*
- *Modeling and Theoretical studies of electronic structures, optical properties, transport, many-body effects*
- *Nanomaterial based devices: novel architectures, performance characterization; modelling and simulations*
- *Advanced Characterization: Photo-physics, Capacitance, Defect studies, Microscopy, Piezoelectricity, etc.*

### **Tentative list of invited speakers (To be confirmed)**

**Dr. Gabreile Rain** (ETH Zrich) **Dr. Jovana V. Milic** (University of Fribourg & EPFL) **Dr. Ivn Mora-Ser** (Institute of Advanced Materials (INAM)) **Dr. Jacques-E. Moser** (cole polytechnique fdrate de Lausanne) **Dr. Celso de Mello Donega** (Utrecht University) **Dr. Ana Flavia Nogueira** (Unicamp) .

### **Symposium Organizers**

**Dr. Diogo B. Almeida** (Unicamp) **Prof. Dr. Lzaro A. Padilha** (Unicamp) **Prof. Dr. Marco A. Schiavon** (UFSJ) .

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