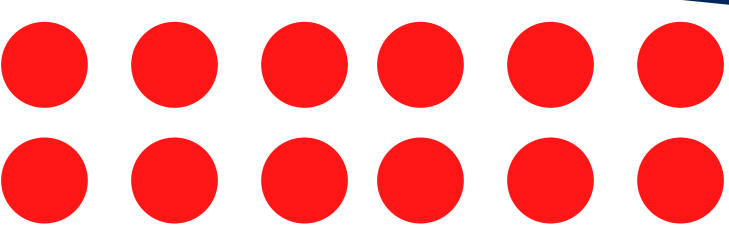


CENIMAT

CENTRO DE INVESTIGAÇÃO DE MATERIAIS

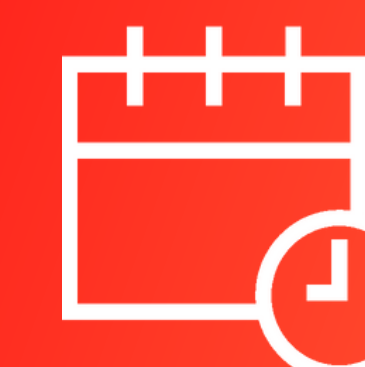
i3NINSTITUTO DE
NANOESTRUTURAS,
NANOMODELAÇÃO E
NANOFABRICAÇÃO**INVITED SPEAKER****DR. DENE B MENDA***Senior Researcher of CENIMAT*

WEBINAR

PEROVSKITE SOLAR CELLS

Inorganic-organic metal-halide perovskite solar cells (PSCs) have become the most attractive class of thin-film photovoltaic (PV) technology in the last decade, due to the astonishingly fast rise of their power conversion efficiency (PCE) values from 3.8 to 25.5% within 10 years only. Besides, this emergent PV technology has shown enormous potential for cost savings, due to the non-vacuum low-temperature deposition and crystallization of the cell layers, enabling also application on inexpensive flexible substrates. The inorganic-organic hybrid perovskites have the general formula ABX_3 , where A is a monovalent cation composed of methylammonium (MA: $CH_3NH_3^+$), formamidinium (FA: $CH_3(NH_2)_2^+$), and/or cesium (Cs^+)), B is a divalent metal cation (e.g. Pb^{2+} , Ge^{2+} , Sn^{2+}) and X is a halide anion (I^- , Br^- , and/or Cl^-). The defect tolerant structure of perovskite materials, their easily tuned energy band gap values, high absorption and crystallinity behaviours led this material and devices to become extensively studied worldwide.

In this seminar, we will be discussing the working principles of solar cells, different technologies, fabrication methods and finally focus on perovskite solar cells including the work has been carried on in Cenimat-i3N. Perovskite solar cells with different active layer compositions and alternative device configurations as well as the developments on electron and hole transport layers will be explained.

**16TH****APRIL, 2021
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