SCIENCESPRINGDAY

FCT FACULDADE DE CIÊNCIAS E TECNOLOGIA UNIVERSIDADE NOVA DE LISBOA

Materials Science Department – CENIMAT|I3N

Plasmonic Solar Cells

CENIMAT | I3N / Microelectronic and Optoelectronics Group

CENIMAT | i3N

A. C. Pimentel (Riflet)

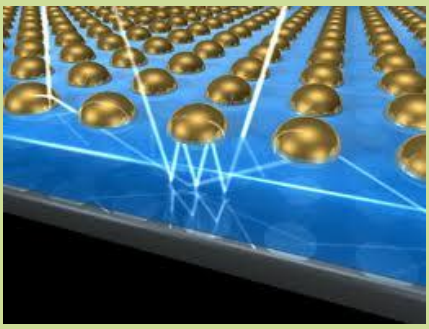
(Post-Doc)

2009 – PhD. In Materials Engineering – IST/UTL

2003 – Undergraduate in Technological Physics Engineering – IST/UTL

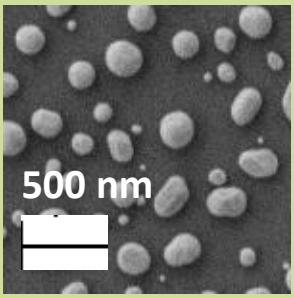
Objectives

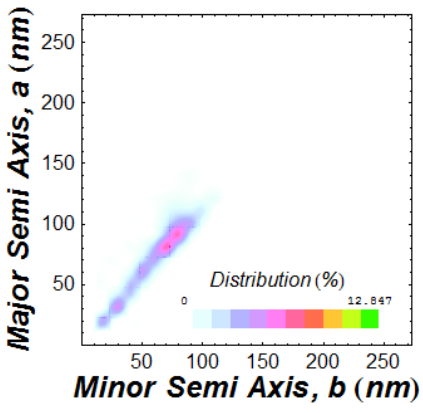
Development, characterization and optimization of Metal Nanoparticles (MNPs) with plasmonic properties to increase the optical path enhancing light scattering inside the active layer of the Solar Cells (SC).



Methodology

- **MNPs Processing:**
  - Thin-Film deposition of metal layers using standard techniques in SC processing
  - Study of post-annealing conditions (temperature, annealing time, atmosphere and pressure)
- **MNPs Characterization**
  - Spectroscopic Measurements of Total and Diffused Reflection and Total and Specular Transmittance of MNPs samples.
  - SEM characterization of MNPs samples for size distribution evaluation





Expected Results

- Uniform size distribution of MNPs as a function of processing parameters
- Enhancement of:
  - Scattering Cross-Section of MNPs
  - Optical path inside the active layer of the SC
  - SC Efficiency

Funding:

FCT Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR