

Sumita Goswami

Researcher

UNINOVA-Instituto de Desenvolvimento de Novas Tecnologias

Email: sumita.goswami@almascience.pt, s.goswami@campus.fct.unl.pt



## Research interests

Present research interests are:

- .. Energy harvesters
- .. Sensors
- .. Self-powered devices
- .. Smart Wearables
- .. Paper Electronics

## Employment

### Research Fellow

Researcher

DCM - Departamento de Ciência dos Materiais

Universidade NOVA de Lisboa

Portugal

9 Sep 2013 → 8 Sep 2014

### Postdoctoral researcher

Researcher

CENIMAT-I3N - Centro de Investigação de Materiais (Lab. Associado I3N)

Universidade NOVA de Lisboa

Caparica, Portugal

1 Oct 2014 → 31 Mar 2020

### Senior researcher

Researcher

UNINOVA-Instituto de Desenvolvimento de Novas Tecnologias

Universidade NOVA de Lisboa

1 Apr 2020 → present

### Field of Research Interest

•Mechano-electrical study at metal-organic/inorganic interface layer towards the application in self-powered data storage device. •Investigation of electrochemical properties at the metal-molecule interface layer and application towards the energy harvesting device. •A new generation flexible field emitter device based on polymeric thin film. •Design and development of fiber transistors for modern textile based applications.

### Education

**Ph.D., 2008-2013** Degree received on 16.09.2014 •Thesis Title: "Investigation on the Electrical and Optical Properties of Polyaniline Nanostructures and Their Composites" •Supervisors: Prof. Manoj K.Mitra and Dr. Kalyan K. Chattopadhyay  
Jadavpur University, Kolkata

Ph.D Course Work, Mat. Sci. & Nano. Tech, 2012

**Master of Science, Physics, 2005-2007** •Master's Thesis Title: "Identification of different phases of the given sample (Coral) & indexing the X-ray powder diffraction pattern (main phase) and to determine the particle size using the scherrer equation" •Supervisor: Prof. Alok K. Mukherjee  
Jadavpur University, Kolkata  
Bachelor, Physics (H), 2002-2005  
Jadavpur University, Kolkata, India

### Research Profile

*Research Experience:*

#### **Postdoctoral Research Project (Oct. 2014 - Continue)**

Recently working in CENIMAT-I3N group as a postdoctoral fellow. The current work program is: •To develop novel strategies for synthesis of polyaniline with different form (depending on oxidation) and incorporate nanoparticles (gold, silver, carbon nano dots) via simple, feasible and cost-effective techniques on different substrates. •Specific investigation of localized charge transport mechanism at the metal/polymer (incorporated with nanoparticle)/metal interface layers by

scanning tunneling microscope. • Investigate the potential of as-prepared polymeric materials in self-powered data storage applications and to study the improvement of their behaviour with inorganic nanoparticle incorporation; • To fabricate self-powered data storage combined with piezoelectronics and CEM. • Also to design and develop fiber transistors as a contributory part to project 1D-Neon.

***Research Project (Sept. 2013 - Sept. 2014):***

Finished this research project associated with the CENIMAT group in FCT-UNL (Portugal) under the supervision of Prof. Teresa Cidade. • Developing inorganic-organic hybrid nanostructure by chemical and hydrothermal method. ¥ Study of hybrid nanostructured based suspensions for Electrorheological Fluid application. • Developing thin films of conducting polymer to further use as the basic material for self-powered organic memory device.

***Ph.D. Research (Jan. 2008 - Jan. 2013):***

• Synthesized polyaniline nanostructures and their composites by simple and feasible chemical processes • Studied their optical and electrical characterizations • Proved these polymer based nanomaterials can have a great implementation in application field like in field emission devices • Performed collaborative research work during this period and published innovative interesting results in reputed International Journals