**Laboratory of Epitaxy and Nanostructures**
**University of Nova Gorica**
**Slovenia**

**Head of Laboratory: prof. dr. Gvido Bratina**

## Background:

The Laboratory of Epitaxy and Nanostructures was established at the University of Nova Gorica in 1999 as the first laboratory in Slovenia to focus on **organic electronics**. In autumn 2006, the Laboratory of Epitaxy and Nanostructures was relocated to a new and fully refurbished location in Ajdovščina, Slovenia, where it now has access to approximately 500m$^2$ of laboratory facilities. Currently, the Laboratory employs four professors, three postdoctoral researchers, and two PhD students.

## Areas of expertise:

- Initial stages of growth in organic semiconductors

The main focus of fundamental research is the study of initial stages of growth on various substrates. Organic semiconductor deposition (examples include PTCDA, pentacene, rubrene) is performed in an ultra-high vacuum chamber, while structural analysis of the thin films is investigated using atomic force microscopy. Recently, the Laboratory has acquired a Kelvin probe station and is performing surface potential investigations on various thin films.

- Electric charge transport

The Laboratory has extensive expertise in time-of-flight measurements as well as Monte Carlo simulations of electric charge transport in organic semiconductor layers.

- Organic thin-film transistors

Research on organic electronic devices includes in-situ electric charge transport measurements performed on thin film transistors during organic semiconductor growth. As part of this research, the Laboratory has gained in-depth experience in thermal evaporation and optical lithography.

- Organic solar cells

The Laboratory has begun to focus its expertise in organic semiconductors into the applied research area of organic solar cells (OSC). It is currently involved in two national projects in this field; research of flexible organic solar cells and large-scale production of OSC. The Laboratory has access to spin casting equipment, atomic force microscopy, solar simulator station, vacuum evaporation chambers, i-v characterization station and a spectral analysis station.

The current research has focused on bulk-heterojunction OSC, combining polymers MEH-PPV, MDMO-PPV and P3HT with PCBM. Future work will focus on incorporating new types of materials into the active layer.

## Contact information:

Prof. Dr. Gvido Bratina
Laboratory for Epitaxy and Nanostructures
University of Nova Gorica
Vipavska 13
SI-5001 Nova Gorica
Slovenia

tel. +386 (0)5 365 35 00
+386 (0)5 365 35 01
fax. +386 (0)5 365 35 27
email: gvido.bratina@p-ng.si
web. www.ung.si