Course: Organic Semiconductors and their integration into electronic devices

Duration: 24 hours

Teacher(s): Casalini Stefano

Curriculum: Chemical Sciences

Description:

Nowadays, the modern lifestyle is largely supported by hi-tech devices (laptop, e-watch, smart TV, foldable devices, etc.), whose functionalities make either our personal and working places more comfortable or our actions more efficient.

The field of electronics is extremely wide, hence these lectures are mainly focused on the scientific field so-termed "Organic Electronics", which relies on the opto-electronic properties of organic semiconductors (OSCs). Although the whole architecture of these devices is composed of many components, OSC is the main core of them, like organic thin-film transistors (OTFTs), organic light-emitting diodes (OLEDs) and organic photovoltaic cells (OPVs), as shown in Fig.1.

Figure 1 Examples of commercial products based on organic light-emitting diodes **(A)**, organic photovoltaic cells **(B)** and organic thin-film transistors **(C)**.

For all these reasons, OSCs have been object of a massive investigation from the scientific community in the last 4-5 decades.

The main objective of this course is to offer a wide overview of the hot-topics connected to the research and development of this technology, such as synthesis, models of charge transport, manufacturing, characterization, etc.

Additional information:

A couple of case studies will be brought to the attention of the students in order to show more practical actions, which are common operations for the usual investigation of such devices.