

Tailoring Functional Bio-Interlayers in Organic Field-Effect Transistors

Professor Luisa Torsi

Department of Chemistry, University of Bari "Aldo Moro", Italy
E-MRS Vice President

Date & Time: June 25th (Thursday) 2015, 13:30 -

Place: Conf. Room 2, Engineering Bldg #2, 3F, The University of Tokyo (7-3-1, Hongo, Bunkyo-ku, Hongo campus)

場所: 東京大学 本郷キャンパス 電気系会議室 2, 工学部新 2 号館 3 階 (文京区本郷 7-3-1)

【 申込不要・無料 free of charge, no registration required】

ABSTRACT: The present lecture aims to provide an overview on the development involving dielectric/organic semiconductor (OSC) interfaces for the realization of bio-functional organic field-effect transistors (OFETs). Specific focus will be given on bio-interfaces and recent technological approaches where biological materials serve as interlayers in back-gated OFETs for biosensing applications. To better understand the effects of the presence of biomolecules deposited at the dielectric/OSC interfacial region, the modification of the dielectric surface properties by means of self-assembled monolayers is discussed. Emphasis will be also given to the modification of solid-state dielectric surfaces, in particular inorganic dielectrics, with biological molecules such as peptides or proteins. Special attention is paid on how the presence of an interlayer of biomolecules and bio-recognition elements underneath the OSC impacts on the charge transport and sensing performance of the device. The role of metal contact/OSC interface in the overall performance of OFET based sensors is also discussed.



EDUCATION

1993 - PhD in Chemical Sciences/Department of Chemistry/University of Bari, Italy

1989 - Laurea Degree (Master) in Physics/Department of Physics /University of Bari, Italy

CURRENT POSITION

2005 - Full professor of Analytical Chemistry/Department of Chemistry/University of Bari, Italy

FELLOWSHIPS AND AWARDS

2014 - Nominated for the "Material Research Society Fellow" award by three MRS fellows

2013 - Best Italian Inventor Women/ Italian Women Inventors & Innovators Network (Italy)

2010 - Heinrich Emanuel Merck Award /Merck (Germany)/First woman to win this prize

2010 - Rosamarina Prize to recognize excellences in the Italian region of Apulia/ Brindisi (Italy)

2008 - Second best lecture at the Italian Physical Society Meeting/Italian Physical Society (Italy)

2006 Jun-Jul - Visiting professor /Department of Chemistry/ University Denis Diderot, Paris VII (France)

2005 Jun - Visiting professor/Department of Chemistry/University of Angers (France)

2000 Jul-Aug - Consultant for Bell Laboratories Lucent Technologies / Murray Hill -NJ (USA)

1994-1996 - Post-Doc Fellowship, Bell Laboratories Lucent Technologies / Murray Hill -NJ (USA)