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Training School on Organic Semiconductors *from Photophysics to Applications*

IMDEA Nanoscience
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January, 26.-30., 2015



EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY



Training School on Organic Semiconductors - from Photophysics to Applications

Dates: 26.-30. Jan. 2015

Location: IMDEA Nanoscience, Madrid, Spain

Polyconjugated organic materials play now a major role in material science for (opto)electronic applications due to their specific properties, providing cheap, sustainable and tunable materials for thin, light-weighted, shape-adapted and/or transparent device architectures. The final functionality of the device is however a complex interplay of intra- and intermolecular parameters, interfacing etc. and thus requires thorough interdisciplinary cooperation, bringing together synthetic chemistry, material science, optical spectroscopy, computational chemistry, and device physics & engineering.

Our workshop at IMDEA Nanoscience wants to foster such interdisciplinary understanding of structure-property relationships in conjugated organic materials, with a special focus on the electronic, optical and photophysical properties, as well as of technical aspects of the spectroscopic techniques. The lectures will include introductions on **Group Theory for Optical Spectroscopy**, **Quantum Chemistry of Conjugated Compounds** (with *Hands-on Workshop*), as well as **Molecular Dynamics**, and introductory lecture series on **Photophysics of Conjugated Organic Materials** (including *Light-Matter Interaction, Electronic Transitions in Conjugated Molecules, Low Bandgap Materials, Vibronic Coupling, Excited State Deactivation, Chromophore aggregation, Photoexcitation Dynamics, Organic/Inorganic Hybrid Systems*), **Practical Aspects of Optical Spectroscopy** (*UV/Vis Absorption, Fluorescence, Pump-Probe, Low temperature, Raman & IR, Microscopy*), and **Organic Optoelectronic Devices** (*Solar Cells, LEDs, FETs, Photodetectors etc.*).

The workshop is mainly intended for Master & PhD students, and Postdocs from Chemistry, Physics, and Material Science working in the field, but also open for interested Junior & Senior Scientists.

Please register via the document below, indicating the lectures of interest.

The Local Workshop Team

Johannes Gierschner, Larry Lüer, Reinhold Wannemacher, Juan Cabanillas, Begoña Milián Medina, Mike Wykes, Santanu Bhattacharyya

26.01.2015	09:15-09:30	Welcome & Introduction	J. Gierschner & L. Lüer	
	09:30-10:45	Group Theory for Optical Spectroscopy - an Introduction	L. Lüer	
	11:15-12:30	Quantum Chemistry of Conjugated Compounds (1)		
	14:15-15:30	Quantum Chemistry of Conjugated Compounds (2)	B. Milián	
	16:00-19:00	<i>Hand-on Workshop</i> : Quantum-Chemical Modeling	M. Wykes	
	27.01.2015	09:15-10:45	Introduction to Molecular Dynamics	M. Wykes
		11:15-12:45	Photophysics of Conjugated Organic Materials (I)	
14:30-16:00		Photophysics of Conjugated Organic Materials (II)		
	16:30-18:00	Photophysics of Conjugated Organic Materials (III)	J. Gierschner	
	28.01.2015	09:15-10:45	Photophysics of Conjugated Organic Materials (IV): Photoexcitation Dynamics	L. Lüer
11:15-12:00		Photophysics of Hybrid Materials (I):	S. Bhattacharyya	
12:00-12:45		Photophysics of Hybrid Materials (II):	C. Gadermeier	
14:30-15:45		Practical Aspects of Optical Spectroscopy (I): UV/Vis Absorption	J. Gierschner	
	16:15-17:15	Practical Aspects of Optical Spectroscopy (II): Pump-Probe Spectroscopy	L. Lüer	
	17:15-19:00	<i>Hands-on Workshop</i> : Global analysis of time-resolved spectra	L. Lüer	
	29.01.2015	09:30-10:45	Practical Aspects of Optical Spectroscopy (III): Fluorescence	J. Gierschner
11:15-12:30		Practical Aspects of Optical Spectroscopy (IV): Low temperature and Homogenous Linewidth Spectroscopy	R. Wannemacher	
	14:15-15:30	Practical Aspects of Optical Spectroscopy (V): Raman & IR Spectroscopy	R. Wannemacher	
	16:00-17:00	Practical Aspects of Optical Spectroscopy (VI): Microscopy	I. Scheblykin	
	17:15-18:15	Optical Microscopy of Organic Conjugated Materials	I. Scheblykin	
	30.01.2015	09:15-10:45	Devices (I): Organic Solar Cells	L. Lüer
		11:15-11:45	Devices (II): Organic Solar Cells	L. Lüer
	11:45-12:45	Devices (III): Organic Lasers, OLEDs	J. Cabanillas	
14:30-15:30	Devices (IV): OFETs, Photodetectors etc.	J. Cabanillas		
16:00-17:00	<i>Lab Tour</i>	S. Bhattacharyya		