

Abstract

Workshop on π -Conjugated Organic Materials for Optoelectronic Applications

Dates: 03. & 04. Dec. 2013, 27.-31. Jan. 2014

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*), **Practical Aspects of Optical Spectroscopy** (*UV/Vis Absorption, Fluorescence, Pump-Probe, Low temperature, Raman & IR*), and **Organic Optoelectronic Devices** (*Solar Cells, LEDs, FETs, Photodetectors etc*).

The workshop is 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 from IMDEA Nanoscience and Associated Groups.

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

The Workshop Team

(Johannes Gierschner, Larry Lüer, Reinhold Wannemacher, Juan Cabanillas, Begoña Milián Medina, Cristina Flors, Mike Wykes, Shinto Varghese)

Workshop

π -Conjugated Organic Materials for Optoelectronic Applications

03.12.2013	16:00-18:00	Practical Aspects of Optical Microscopy 1/2 *	C. Flors
04.12.2013	16:00-18:00	Practical Aspects of Optical Microscopy 2/2 *	C. Flors
27.01.2014	10:00-11:00	Group Theory for Optical Spectroscopy - an Introduction	L. Lüer
	11:30-12:45	Quantum Chemistry of Conjugated Compounds (1)	
	14:30-15:45	Quantum Chemistry of Conjugated Compounds (2)	B. Milián
	16:00-19:00	Hand-on Workshop: Quantum-Chemical Modeling	M. Wykes
28.01.2014	09:30-11:00	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)	
	16:15-17:45	Photophysics of Conjugated Organic Materials (III)	J. Gierschner
29.01.2014	09:30-11:00	Photophysics of Conjugated Organic Materials (IV)	J. Gierschner
	11:15-12:45	Photophysics of Conjugated Organic Materials (V): Photoexcitation Dynamics	L. Lüer
	14:00-15:00	Practical Aspects of Optical Spectroscopy (I): Pump-Probe Spectroscopy	J. Cabanillas & L. Lüer
	15:00-16:30	Hands-on Workshop: Global analysis of time-resolved spectra	L. Lüer
30.01.2014	10:00-11:15	Practical Aspects of Optical Spectroscopy (II): UV/Vis Absorption	J. Gierschner
	11:30-12:45	Practical Aspects of Optical Spectroscopy (III): Fluorescence	J. Gierschner & S. Varghese
	14:30-15:45	Practical Aspects of Optical Spectroscopy (IV): Low temperature and Homogenous Linewidth Spectroscopy	R. Wannemacher
	16:00-17:15	Practical Aspects of Optical Spectroscopy (V): Raman & IR Spectroscopy	R. Wannemacher
31.01.2014	10:00-12:00	Organic Optoelectronic Devices (I): Organic Solar Cells	L. Lüer
	14:30-15:30	Organic Optoelectronic Devices (II): Organic Lasers	S. Varghese
	16:00-17:00	Organic Optoelectronic Devices (II): OLEDs, OFETs, Photodetectors etc.	J. Cabanillas

Location: IMDEA Nanoscience, Library, ground floor
(C/ Faraday 9, Campus Cantoblanco, Madrid Spain)

* External seminar. Information on request (crisrina.flors@imdea.org)

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