

## Announcement

The Lecture Series

# Optical Spectroscopy on Organic Materials

by

*Dr. Johannes Gierschner*

IMDEA Nanoscience, Madrid

will be given as a compact seminar of 15h

**Wednesday, 23.01.2008, 14.00 - 17.00 h**

**Thursday, 24.01.2008, 9.00 - 12.00 h**

**14.00 - 17.00 h**

**Friday, 25.01.2008, 9.00 - 12.00 h**

**14.00 - 17.00 h**

**Seminario de ICMol (0.8)**

**Edificio de Institutos de Paterna**

**Universidad de Valencia**

The lectures are addressed to **Master & PhD students** and **PostDocs** working in Optical Spectroscopy, Organic Optoelectronic Devices and Quantum Chemistry on Organic Materials. *Guests are highly welcome!!*

J. Gierschner

# Lecture Series: **Optical Spectroscopy on Organic Materials**

ICMol, Universidad de Valencia

*Dr. Johannes Gierschner, IMDEA Nanoscience, Madrid*

## **A. "Absorption Processes: Basic Principles"**

1. Introduction
  - 1.1. Definitions, Terminology, Literature
  - 1.2. Lambert-Beer Law
2. Classical Theory of Absorption
  - 2.1. Cross section of Absorption
  - 2.2. Electrostatic Approximation
  - 2.3. Absorption und Resonance Condition
  - 2.4. Transition Dipole Moment
3. Molecular Spectra
  - 3.1. Vibronic Coupling
  - 3.2. Solvent Shifts
  - 3.3. Line Widths

## **B. "Molecular Structure, Intermolecular Interactions"**

4. Molecular Structure & Optical Spectra
  - 4.1. Polyene-like Molecules
  - 4.2. Substituent Effects
5. Intermolecular Interactions and Optical Spectra
  - 5.1. Classification of Electronic Interactions
  - 5.2. Spectral Positions and Line Shapes

## **C. "Light Scattering"**

6. Light Scattering
  - 6.1. Basic Principles
  - 6.2. Rayleigh-Scattering
  - 6.3. Mie-Scattering
  - 6.4. Particle Sizing

## **D. "Fluorescence"**

7. Fluorescence Spectroscopy
  - 7.1. Basic Principles
  - 7.2. Polarization of Fluorescence

## **E. "Energy Transfer"**

8. Energy Transfer
  - 8.1. Radiative Energy Transfer
  - 8.2. Förster-Energy Transfer
  - 8.3. Exchange Mechanism