

ESR 5 position

Project title: Photoinduced processes in host-guest systems based on molecular capsules

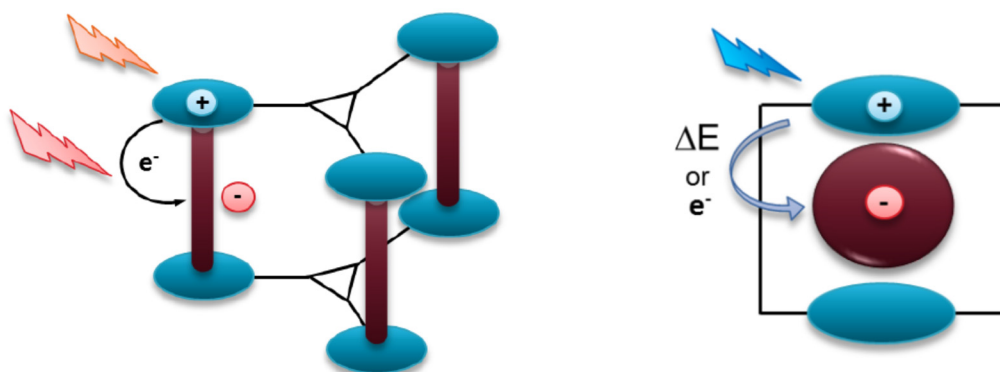
Location: Consiglio Nazionale delle Ricerche Istituto per la Sintesi Organica e la Fotoreattività, Bologna, Italy

Supervisor: Dr. Barbara Ventura

Objectives of the individual project:

The ESR individual project will focus on: i) characterization of photo/electro active guests and study of encapsulation processes; ii) identification of the mechanisms at the basis of useful photo/electro induced functions (e.g. formation/disruption processes); iii) characterization of photo/electro active units to be used as building blocks in the walls of photo-switchable capsules; iv) study of the photo/electro induced processes that occur in selected host-guest systems promising for a wide range of applications: from drug delivery and cancer treatment to chemical reaction initiation.

A couple of examples are schematized below:



References of the research group related to the subject:

- [1] A. Briš, P. Trošelj, D. Margetid, L. Flamigni, B. Ventura, *ChemPlusChem* **2016**, 81, 985-994.
- [2] S. Durot, L. Flamigni, J. Taesch, T. T. Dang, V. Heitz, B. Ventura, *Chem. Eur. J.* **2014**, 20, 9979-9990.
- [3] M. Beyler, L. Flamigni, V. Heitz, J.-P. Sauvage, B. Ventura, *Photochem. Photobiol.* **2014**, 90, 275-286.
- [4] G. Aragay, B. Ventura, A. Guerra, I. Pintre, C. Chiorboli, R. García-Fandiño, L. Flamigni, J. R. Granja, P. Ballester, *Chem. Eur. J.* **2014**, 20, 3427-3438.
- [5] L. P. Hernández-Eguía, E. C. Escudero-Adán, I. C. Pintre, B. Ventura, L. Flamigni, P. Ballester, *Chem. Eur. J.* **2011**, 17, 14564-14577.

Expected results:

The ESR is expected to gain basic and advanced knowledge in photophysics and photochemistry and will end with skills in many spectroscopic techniques, such as absorption and emission spectroscopy, time-resolved luminescence, transient absorption, flash photolysis, confocal fluorescence microscopy. The ESR will also gain experience in ultrafast photophysical techniques.



Planned secondment(s):

Academic Secondment: Three months secondment at UNINE working on the synthesis of ruthenium metalla-assemblies, with training on X-ray diffraction methods. This secondment will allow the ESR to actively work in synthetic chemistry.

Industrial Secondment: Six-months secondment at Leitaf facilities, where he/she will work on supported photoswitchable molecular containers for encapsulation of drugs. Light sources, light-sensitive organic chemical groups and suitability of supports (e.g. biopolymer) for injectable and/or oral medication for localized delivery will be investigated.

Hosting Institution:

Istituto per la Sintesi Organica e la Fotoreattività (ISOF) – Consiglio Nazionale delle Ricerche (CNR) – Bologna, Italy. Director: Dr. Roberto Zamboni.

ISOF has fully equipped laboratories for steady-state and time-resolved photophysical characterization of materials both in solution and in the solid state. The ESR will work under the supervision of Dr. Barbara Ventura.

Eligibility requirements

Candidates of any nationality can apply, but in order to be eligible for the position the following criteria need to be fulfilled:

- The applicant shall at the time of recruitment be in the **first four years of his/her research career** and have **not been awarded a doctoral degree**.
- The applicant must not have resided or carried out his/her main activity **in Italy for more than 12 months in the 3 years immediately prior to the recruitment**.

Candidate profile: candidates must hold a **Master's degree in Chemistry** with excellent academic transcripts. We are looking for **highly motivated** students with **good communication skills**.

Questions regarding the recruitment can be sent to: noah@noah-itn.eu.

Questions regarding the project can be sent to: barbara.ventura@isof.cnr.it

