



UNIVERSITÀ DEGLI STUDI DI NAPOLI "FEDERICO II"

Dipartimento di Scienze Chimiche

Dottorato in Scienze Chimiche - XXXVI

Ph.D. in Chemical Sciences

Cycle XXXVI

PIs: Ugo Caruso, Alessandro Pezzella

Research project title:

Synthesis and study of photoactive compounds for applications in organic electronics and biotechnologies.

Key words: Synthesis; Photoactive Compounds; Bioelectronics; Biotechnologies; Eumelanins.

Research project abstract:

The research project is structured according to the following organizational scheme. A first phase of design and synthesis of new structures capable of providing an emissive as well as foto-conversion responses, both low molecular weight and polymeric, will be followed by a second phase of basic characterization, conducted by DSC and TGA, Mass Spectrometry, NMR and RX diffractometry, SEM, UV-visible and Fluorescence spectroscopy. The structures with the most interesting potentialities will then be examined by Computational Modeling for the rationalization of absorption/emission behaviors and for the optimization of the structures already obtained with possible variations of the same. Finally, among the new synthesized photoactive chromophores the response will be tested in bioelectronic/optoelectronic devices (LEDs and/or OPVs, cell culture substrates), as sensors of biologically relevant parameters (metals of biological interest, pH, or other specific ions), as fluorophores with targeted biological activity (membrane markers) and for signal transduction between cell cultures and electronic devices.