



UNIVERSITÀ DEGLI STUDI DI NAPOLI "FEDERICO II"

Dipartimento di Scienze Chimiche

Dottorato in Scienze Chimiche - XXXIV Ciclo

Research Doctorate (Ph.D.) in Chemical Sciences

34rd Cycle – Academic Year 2018/2019

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Project Information

1 - Title

Design and structural study of organic and hybrid conjugated systems for applications in electronics and photonics

2 - Key words

Organic semiconductors, organic dyes, photovoltaics, perovskite, crystal structure

3 - Abstract

The project is focused on the design, synthesis and characterization of novel highly π -conjugated materials for applications in organic electronics and photonics. As compared to traditional materials, organic or hybrid organic/inorganic systems are typically soluble in organic solvents so that devices based on them can be easily prepared by means of cheap solution techniques. Purely organic materials will be investigated, characterized by an alternation of electron-donor and acceptor groups along the molecular backbone and endowed with high molar extinction coefficient. Moreover, organic, fused-ring heterocyclic molecules will be used as ligands for the realization of novel hybrid materials of perovskite structure and lead free. In particular, N-rich heterocycles will be considered. The prepared materials will be characterized in detail for what concerns their chemical-physical properties and studied at a computational level. They will be used as active layers in several electronic devices with a particular focus on photovoltaic devices.