

FINAL MASTER PROJECT PROPOSAL



Title

Fabrication of molecular electronic devices using simple chemical procedures

Supervisor

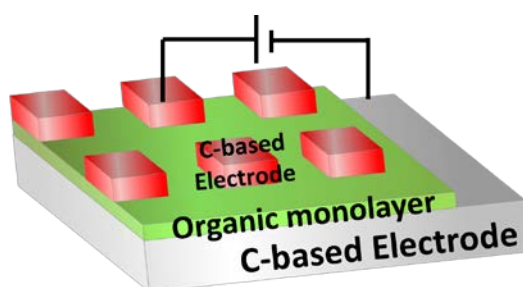
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Summary of the project

Objective: Construction of molecular electronic devices by embedding an organic monolayer onto totally organic electrodes.

Motivation: The use of molecules as critical functional elements in electronic devices, Molecular Electronics, can open new routes to high added value electronic products. In addition, there is a growing interest towards the fabrication of all carbon-based Molecular Electronic devices due to the intrinsic limitations involved in the use of metals (high cost, diffusion of metal atoms on the surface, quenching effects in optoelectronic devices, etc.).

Activities: The student will work on the assembly of organic materials between carbon based electrodes (HOPG, graphene oxide, graphene, PEDOT-PSS, etc.) using physicochemical methods (Langmuir-Blodgett, spin coating, and electrographing technologies). The monomolecular films will be characterized by a wide range of techniques such as UV-vis, FTIR, and XPS spectroscopies, STM, AFM and SECM microscopies as well as electrochemical methods.



1. Irimia Vladu, M. Chem. Soc. Rev., 2014, 43, 588.
2. Cea, P.; Ballesteros, L.M.; Martín, S. Nanofabrication 2014; 1: 96.
3. Sangiao, S.; Martín, S.; González-Orive, A.; Magén, C.; Low, P. J.; De Teresa, J. M.; Cea, P. Small, 13, 1603207, 2017