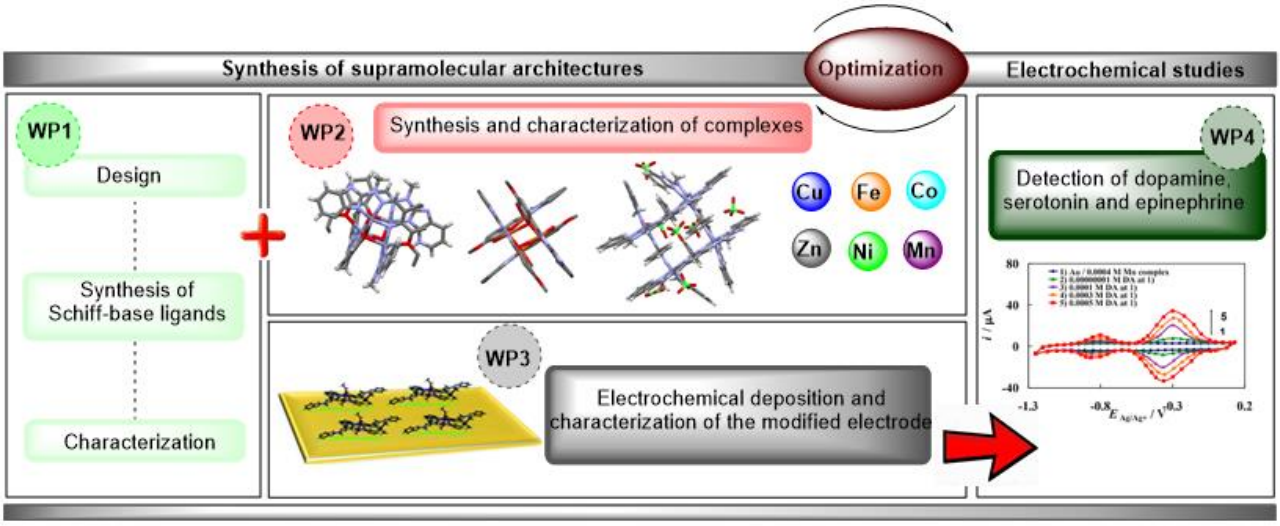
Aim of the project

The present research project aims at rational design and synthesize series of new self-assembly monolayers composed of (metallo)supramolecular architectures to modify gold electrode and its application for selective dopamine, serotonin and epinephrine sensing in real human body fluids. New self-assembly monolayers composed of complexes to modify gold electrode offer a promising perspective in the detection of neurotransmitters, and thus may contribute to solving global problems, such as early detection of neurological disorders.

Concept and work plan

Realization of the present project can be divided into four Work Packages (WP) which are gathered in two sections I – Design, synthesis and characterization of supramolecular architectures – cages and grids, and II - Electrochemical studies.



The project will follow a stepwise approach between disparate work packages in order to obtain in cheap, friendly environment and facile way compounds capable of detecting neurotransmitters, characterized by high sensitivity and selectivity with low detection limit of dopamine sensor and other two neurotransmitters: serotonin and epinephrine, using green solution that do not endanger living organisms. The present project will be realized in accordance with the methodology and principles in chemical sciences adaptation.

Anticipated results

The proposed families of Schiff base ligands and cage and grid type complexes will increase the versatility in constructing various SAMs capable of modifying the electrode surface, but also contribute to a basic understanding of coordination chemistry. In addition, the electrochemical properties of the obtained systems will be examined in the context of electrode deposition and modification, in particular with regard to the selective detection of neurotransmitters. In this way, the electrochemical nature of the planned architectures will be demonstrated, which will ultimately contribute to solving some global challenges. The proposed activities should have a significant scientific and educational impact.