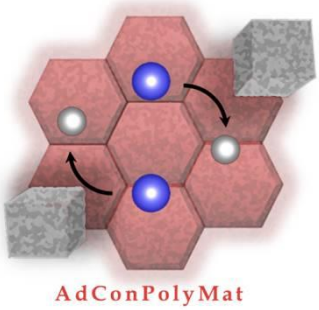
AdConPolyMat

Advanced **Con**ducting **Poly**mer-Based **Mat**erials for Electrochemical Energy Conversion and Storage, Sensors and Environmental Protection

Funded by the Science Fund of the Republic of Serbia – IDEAS program 2022-2024



Project implementation by three scientific research organizations (SROs):

- University of Belgrade – Faculty of Physical Chemistry (FPC , lead SRO)
- University of Belgrade – Faculty of Pharmacy (FPUB link, SRO1)
- "Vinča" Institute of Nuclear Sciences, University of Belgrade (INNV link, SRO2)

Duration: 01 January 2022 – 31 December 2024

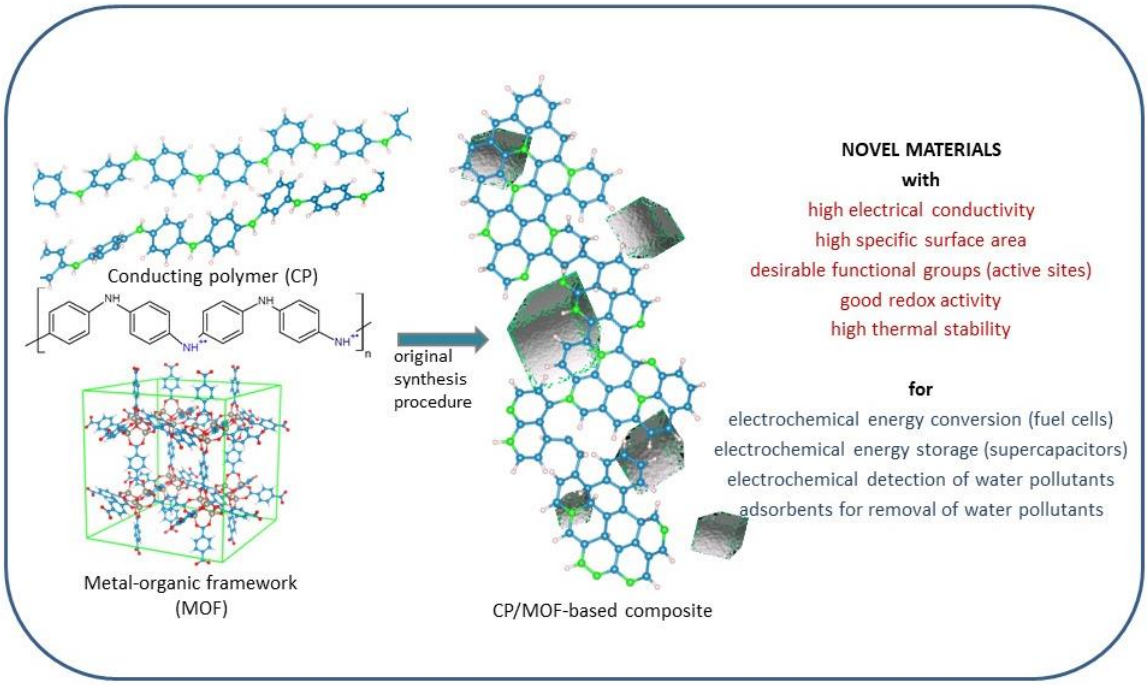
Approved budget: EUR 363,044.07

GOAL: development of a novel generation of advanced conducting polymer (CP)-based composite materials which possess desirable properties (high specific surface area, high electrical conductivity, specific functional groups as active sites, good redox activity and thermal stability) enabling their superior performance in following applications: 1) electrochemical energy conversion- as electrocatalysts in fuel cells, 2) electrochemical energy storage - as electrode materials in supercapacitors, 3) electrochemical sensing of water pollutants, and 4) removal of water-pollutants by adsorption/oxidative degradation.

CONCEPT:

- syntheses of various binary and ternary (nano)composites containing CP or carbonized-CP as main component; other added components (such as metal-organic frameworks) selected to improve final material's properties
- self-designed original synthetic routes/procedures
- comprehensive characterization of synthesized materials in terms of their elemental content, molecular, supramolecular and crystalline structure, electrical and electrochemical properties, thermal stability, textural and other properties
- testing of prepared composites performance in the aforementioned applications.

The idea is that developed CP-based composites overcome or reduce current limitations of CPs and exhibit improved performance in applications compared to pristine CPs and their carbonaceous derivatives due to attributes of each of the building components included and synergic actions between them.



TEAM: 14 members

Principal investigator:
Prof. Dr Gordana Ćirić-Marjanović, FPC

5 Key members-coordinators of working packages:
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NEW EQUIPMENT:

- Nanoparticle tracking analyzer (NTA) NanoSight NS300, Malvern - for the measurements of size, distribution and absolute concentration of nanoparticles in solutions
- Bipotentiostat – for the advanced electrochemical characterization (e.g. via rotating ring-disk electrode (RRDE) measurements)
- Analytical balance (high precision)
- Small laboratory equipment (electrodes, magnetic stirrers, vortex ...)

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