Electrocatalysis and Applied Electrochemistry

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The research group applies electrochemical methods to the study of chemical problems, conducting investigations in electro-organic chemistry,
electrochemical surface science, catalysis and environmental electrochemistry. The research activity is centered in the field of molecular electrochemistry with particular attention to electrosynthesis and electrocatalysis, especially the study of mechanisms of organic electrochemical processes, the development of eco-friendly electrosyntheses for industrial applications and the development of electrocatalytic materials and/or electrocatalytic processes. The main topics of the research activity are electrocatalytic reduction of organic halides, mechanisms of electron transfers, electrochemical approaches to controlled radical polymerizations, electrochemical activation of carbon dioxide, electrocarboxylation and electrosyntheses of fine chemicals and pharmaceutical compounds, and development of electrocatalytic materials for Oxygen Reduction Reaction (ORR).

- *Absolute Potential of the Standard Hydrogen Electrode and the Problem of Interconversion of Potentials in Different Solvents,* J. Phys. Chem. B, **2010**, 114, 7894-7899.
- *Electrochemically Mediated Atom Transfer Radical Polymerization*, Science, **2011**, 332, 81-84.
- *Electrocatalytic properties of transition metals towards reductive dechlorination of polychloroethanes*, Electrochim. Acta, **2012**, 70, 50-61.
- *Electrochemical triggering and control of Atom Transfer Radical Polymerization,* Curr. Opin. Electrochem., **2018**, 8, 1-7.
- *One Step forward to a Scalable Synthesis of Platinum-Yttrium alloyed Nanoparticles on Mesoporous Carbon for Oxygen Reduction Reaction,* J. Mater. Chem. A, **2016**, 4, 12232-12240.