

New materials for energy conversion and storage

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Main research interests are in the field of the synthesis and reactivity of transition metals complexes and their applications in homogeneous and heterogeneous catalysis. The laboratory is equipped with a carbonylation plant, GC, HPLC and other instruments dedicated to the following research lines:

- synthesis, structural investigation and reactivity of palladium complexes;
- organic synthesis catalyzed by transition metals via carbonylation and hydrogenation;
- catalytic copolymerization (carbon monoxide-olefins) for polyketones production.

The group is currently involved in two projects for the synthesis and functionalization of materials for energy conversion and storage.

- *A polyketone-based anion exchange membrane for electrochemical applications: synthesis and characterization*, *Electrochimica Acta*, **2017**, 226, 148-157.
- *A hybrid polyketone–SiO₂ support for palladium catalysts and their applications in cinnamaldehyde hydrogenation and in 1-phenylethanol oxidation*, *Applied Catalysis A: General*, **2015**, 496, 40-50.
- *Carbonylation of ethene catalysed by Pd(II)-Phosphine complexes*, *Molecules*, **2014**, 19, 15116-15161.
- *Interplay between morphology and electrochemical performance of “core-shell” electrocatalysts for oxygen reduction reaction based on a PtNix carbon nitride “shell” and a pyrolyzed polyketone nanoball “core”*, *International Journal of Hydrogen Energy*, **2014**, 39, 2828-2841.
- *Synthesis, studies and fuel cell performance of “core-shell” electrocatalysts for oxygen reduction reaction based on a PtNix carbon nitride “shell” and a pyrolyzed polyketone nanoball “core”*, *International Journal of Hydrogen Energy*, **2014**, 39, 2812-2827.