

# Department of Catalysis and Organometallic Chemistry

## Laboratory of Organometallic Chemistry and Homogeneous Catalysis



### Current research works

- Synthesis of cyclopentadienylnickel complexes with N-heterocyclic carbenes and their application in olefin polymerization
- Ruthenium-catalyzed olefin metathesis in transition metal coordination spheres: synthesis of functionalized nickelocene derivatives
- Alkylaluminum, -gallium and -indium derivatives of diols, dicarboxylic acids, amides and boroxines and their activity in polymerization
- Organoaluminum compounds as precursors of nanosized aluminum oxide
- Nanomaterials based on aluminum oxide dotted with metals and metal oxides nanoparticles
- Organometallic hydrides for hydrogen storage and energetic materials
- Synthesis, structure and properties of nickelacycles
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### Selected publications

- Radosław Kamiński, Beata Herbaczyńska, Monika Srebro, Antoni Pietrzykowski, Artur Michałak, Lucjan B. Jerzykiewicz and Krzysztof Woźniak, *On the nature of Ni...Ni interaction in a model dimeric Ni complex*, Phys. Chem. Chem. Phys., **2011**, 13, 10280.
- A. M. Jastrzębska, A. R. Kunicki, A. R. Olszyna, E. Karwowska, *Al<sub>2</sub>O<sub>3</sub>-Ag nanopowders: new method of synthesis, characterization and biocidal activity*, Advances in Applied Ceramics, **2011**, 110-108.
- Włodzimierz Buchowicz, Wioleta Wojtczak, Antoni Pietrzykowski, Anna Lupa, Lucjan B. Jerzykiewicz, Anna Makal, Krzysztof Woźniak, *Synthesis, Structure, and Polymerization Activity of Cyclopentadienyl-nickel(II) N-Heterocyclic Carbene Complexes: Selective Cross-Metathesis in Metal Coordination Spheres*, Eur. J. Inorg. Chem., **2010**, 648.
- I. D. Madura, J Zachara, K. Leszczyńska, A. R. Kunicki, *Crystal structure of dicyclopentadienylaluminum complex directed by weak C-H...π interactions*, J. Molecular. Struct. **2010**, 968, 93.
- Włodzimierz Buchowicz, Magdalena Szmaida, *Carbonyl-Substituted Nickelocenes by the Cross Metathesis Route*, Organometallics, **2009**, 28, 6838.
- W. Ziemkowska, M. K. Cyrański, A. Kunicki, *Alkylaluminum derivatives of diphenic acid: novel aluminium carboxylates*, Inorg. Chem., **2009**, 48, 7006.
- W. Ziemkowska, M. K. Cyrański, *Synthesis and structural characterization of some alkylindium bisphenoxides*, Organometallics, **2009**, 28, 5593.
- P. Buchalski, E. Kamińska, K. Piwowar, K. Suwińska, L.B. Jerzykiewicz, F. Rossi, F. Laschi, F. de Biani, P. Zanello, *Nickelacyclic-cobaltocene vs. Nickelacyclic-nickelocene. Synthesis, X-ray Structures, Electron Transfer Activity, EPR Spectroscopy and Theoretical Calculations*, Inorg. Chem., **2009**, 48, 4934.
- P. Buchalski, I. Grabowska, E. Kamińska, K. Suwińska, *Synthesis and structures of 9-nickelafluorenyllithium complexes*, Organometallics, **2008**, 27, 2346.

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### Research profile

Formation and cleavage mechanisms of metal-carbon bonds  
Metal clusters  
Olefin and heterocyclic monomers polymerization catalyzed by metal complexes  
Carbon-hydrogen bond activation by metal complexes  
Organometallic functional materials  
Organometallics as precursors of nanosized metal oxides  
Olefin metathesis in metal coordination spheres  
Synthesis, structure and catalytic activity of transition metal NHC-carbene complexes