

Department of Catalysis and Organometallic Chemistry

Laboratory of

HETEROGENEOUS CATALYSIS



Current research works

- measurements of acid-base properties of solid catalysts
- chemistry of solid superacids
- catalytic recycling of polystyrene and polyolefins
- selective hydrogenation of α,β -unsaturated carbonyl compounds
- synthesis of amines from synthesis gas and ammonia or by an amination of alcohols
- application of FTIR, EPR and chemical trapping in solid catalysts characterization
- metal oxide catalysts in hydrogen transfer reactions from alcohols to carbonyl compounds (chemo-, regio- and diastereoselectivity)
- transition metal oxides as green catalysts in the transformations of carboxylic acids and their derivatives

Selected publications

- M. Gliński, U. Ulkowska, *Reactivity of alcohols in chemoselective transfer hydrogenation of acrolein over magnesium oxide as the catalyst*, Catal. Lett., 141 (2011) 293.
- M. Gliński, *Highly diastereoselective transfer hydrogenation of 4-t-butylcyclohexanone in the presence of magnesium oxide*, Reac. Kinet. Mech. Catal. 99 (2010) 93.
- M. Gliński, *Catalytic hydrogen transfer over magnesia. Vapour and liquid phase reduction of various aralkyl ketones*, Appl. Catal. A Gen., 349 (2008) 133.
- J. Sokołowski, G. Rokicki, M. Marczewski, J. Krajewska, *Fuel fractions obtained in the recycling of plastics*, Pol. J. Chem. Techn., 9, (2007) 46.
- J. Sokołowski, G. Rokicki, M. Marczewski, K. Szewczyk, *Thermal-catalytic recycling of polyolefins and polystyrene*, Czasopismo Techniczne Ch, Wydawnictwo Politechniki Krakowskiej, 2-Ch, (2008) 311.
- J. Kijenski, P. Winiarek, *Concept of the synthesis of novel platinum catalysts for the selective hydrogenation of unsaturated carbonyl compounds*, Stud. Surf. Sci. Catal., 143 (2002) 787.
- J. Kijenski, P. Winiarek, Ł. Kojro, *Lengthening the link of the added value in the chemical industry. Part II. Preparation of cyclohexylamine derivatives by amination of phenol with aliphatic amines*, Przem. Chem. 85, (2006) 117.
- M. Pisarek, M. Łukaszewski, P. Winiarek, M. Janik-Czachor, *Catalytic activity of Cr- or Co-modified Ni-based rapidly quenched alloys in the hydrogenation of isophorone*, Appl. Catal. A-Gen 358 (2009) 240.

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Research profile

mechanisms of catalytic reactions
catalyst surface characterization
acid-base catalysis
catalysis in polymer wastes recycling
hydrogen transfer reactions
hydrogenation over precious metals catalysts
synthesis of fine chemicals
synthesis of carbonyl compounds
synthesis of metal and metal oxide catalysts
green catalysis