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VABILO NA PREGLOV KOLOKVIJ / INVITATION TO THE PREGL COLLOQUIUM

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Velika predavalnica Kemijskega inštituta / Lecture Hall at the National Institute of Chemistry; Hajdrihova 19, Ljubljana

Design of Solid Catalysts for specific Reactions

In an approach to design selective solid catalysts we start from the knowledge, at the molecular level, of the reaction to be catalyzed. Then hypothesis are made on the nature of the active sites required. At this point we are ready to synthesize solid materials, in where the required active sites are introduced as well defined entities. On top of that the adsorption properties of the solid are tailored to optimize the interactions between reactants, catalyst and products.

Following this methodology, solid catalysts will be presented in where the active sites correspond to well-defined transition metal complexes and organocatalysts that are either grafted or structurally built into solids. In this case, the role of the solid can go beyond a simple support, since it is designed to intervene in the reaction either by stabilizing transition states or by introducing additional active sites. Well-defined single or multiple active sites can also be introduced into crystalline nanoporous materials with controlled adsorption properties, and this allows to perform new acid and redox, one step or multistep reactions. Finally it will be shown that by depositing metal nanoparticles or metal clusters (Au, Pd, Pt) on proactive supports (CeO_2, Fe_2O_3, MgO, hydrotalcites, etc.) we can open new catalytic reaction routes for C-C bond formation, oxidations and reductions. These catalytic systems allow the design of multifunctional solid catalysts that are able to carry out multistep process through cascade type reactions that were not possible before.

Vljudno vabljeni! / Kindly invited!

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