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v Ljubljani

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*in kemijsko tehnologijo*

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*VABILO NA PREDAVANJE  
V OKVIRU DOKTORSKEGA ŠTUDIJA  
KEMIJSKE ZNANOSTI*

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z naslovom:

**Non-Hydrolytic Sol-Gel Synthesis of  
Micro/Mesoporous Silicate and Phosphate  
Materials**

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v predavalnici 1 v 1. nadstropju Fakultete  
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*Vljudno vabljeni!*

**Abstract:**

Synthetic methods based on sol-gel chemistry are attractive solution-based routes to many simple and complex materials. The non-hydrolytic procedures are viable alternatives to classical aqueous techniques and these condensation reactions are inherently suitable for fabrication of mixed-metal and multimetallic oxidic and hybrid inorganic-organic systems. We developed novel non-hydrolytic sol-gel routes to several classes of porous xerogels, such as silicophosphates and -phosphonates, aluminophosphates, Al, Ti, Zr, and Sn silicates, hybrid aromatic organosilicates, and organosilicophosphates. The polycondensation reactions are based on elimination of small molecules, such as trimethylsilyl ester of acetic acid, dialkylacetamides, silylamines, ethers or alcohols. These elimination reactions provide microporous xerogels with high surface areas. Control of porosity and pore size is achieved by several methods, such as choice of suitable precursors, application of bridging groups, or addition of Pluronic templates. Residual organic groups on the surface allow for chemical modification and anchoring of various groups. Calcination in air provides xerogels that are stable at temperatures up to 500 °C and show superior catalytic activity and selectivity in various catalytic reactions. The prepared xerogels were characterized by solid-state  $^{13}\text{C}$ ,  $^{27}\text{Al}$ ,  $^{29}\text{Si}$ ,  $^{31}\text{P}$  NMR, IR, surface area analysis, DRUV-vis, TGA and XRD.