Serbian Ceramic Society Conference

ADVANCED CERAMICS AND APPLICATION V

New Frontiers in Multifunctional Material Science and Processing

Serbian Ceramic Society
Institute of Technical Sciences of SASA
Institute for Testing of Materials
Institute of Chemistry Technology and Metallurgy
Institute for Technology of Nuclear and Other Raw Mineral Materials
School of Electrical Engineering and Computer Science of Applied Studies

PROGRAM AND THE BOOK OF ABSTRACTS

Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 21st-23rd September 2016.

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centrations of heavy metal ions were determined by using Ion chromatography coupled with mass spectrometry (ICP-MS).

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Novel amino modified GMA-EGDMA-m-PMMA monolith for efficient cationic pollutant removal

Jelena Rusmirović[1], Steva Lević[2], Vladimir Pavlović[2,3], Aleksandar Marinković[4]
[1]Innovation center, Faculty of Technology and Metallurgy, Belgrade, Serbia
[2] Faculty of Agriculture, University of Belgrade, Belgrade-Zemun, Serbia
[3] Institute of Technical Sciences of the SASA, Knez Mihailova 36, 11000 Belgrade, Serbia
[4] Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia

Novel macro/micro-porous monolith material containing surface amino functional groups was developed for efficient cationic pollutant removal. The monolith was prepared by copolymerization process of monomers glycidyl methacrylate (GMA), ethylene glycol dimethacrylate (EGDMA) and modified low molar mass poly(methyl methacrylate) (PMMA). In order to improve mechanical stability of GMA-EGDMA monolith, surface of PMMA was modified with ethanol amine in first step, and introduction of methacryloyl chloride in a second step produced m-PMMA. Synthesized GMA-EGDMA-m-PMMA monolith was modified with poly(ethylene imine) (PEI). The effectiveness of copolymerization, as well as introduction of amino groups *via* PEI modification were confirmed by FTIR and Raman analyses. The morphological appearance of the synthesized monolith, examined by scanning electron microscopy (SEM), clearly indicates porous structure. The results of textural parameters, *i.e.* monolith porosity, determined by using liquid saturating method, indicate high degree of porosity. Cationic pollutant removal capacity, cadmium and lead, of 32.0 and 42.5 mg g^{-1} at 25 °C indicates that this monolith is high efficient. This macro/micro-porous monolith could be a promising adsorbent because of its low-cost synthesis process and excellent performance.

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Influence of mechanical activation on mechanical properties of PVDF-nanoparticle composites

Jelena Živojinović, Adriana Peleš, Vladimir Blagojević, Darko Kosanović, Vladimir Pavlović
Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade, Serbia

The influence of mechanically activated fillers (ZnO, $BaTiO_3$ and $SrTiO_3$ ultra-fine powders) on mechanical properties of poly(vinylidene) fluoride (PVDF) and oxide nanoparticle composite was investigated using molecular simulations. Mechanical activation leads to the creation of new surfaces and the comminution of the initial powder particles, which affects the crystallization of PVDF matrix. In addition, prolonged mechanical activation leads to agglomeration of