

# **NINTH YOUNG RESEARCHERS CONFERENCE MATERIALS SCIENCES AND ENGINEERING**

**December 20-22, 2010, Belgrade, Serbia  
Serbian Academy of Sciences and Arts, Knez Mihailova 35**



## **Program and the Book of Abstracts**

**Materials Research Society of Serbia,  
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### **Poly(itaconic acid) /pectin blends as membrane materials**

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The aim of this study is the application of poly(itaconic acid) (PIA) and pectin complexes that can be used for Direct Methanol Fuel Cell membranes (DMFC). DMFC have received considerable attention both as a portable power source and as a replacement for batteries. In this paper blends of PIA and pectin in ratios from 10 % to 90 % PIA were prepared by casting into films. These films were characterized by FTIR, and DSC. It was shown that the best properties for DMFC has PIA/pectin complex with ratio 50/50.

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### **Kinetics of pertechnetate removal by amino-functionalized glycidyl methacrylate copolymer**

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Technetium-99 comprises a significant health risk, since edible plants can bioaccumulate its most abundant environmental form, a highly mobile pertechnetate anion, and convert it to more lipophilic species that cannot be excreted through urine. Kinetics of pertechnetate removal from aqueous solutions by macroporous crosslinked poly(glycidyl methacrylate-co-ethylene glycol dimethacrylate), functionalized with diethylene triamine, PGME-deta, was investigated. PGME-deta was characterized by elemental analysis, mercury porosimetry and scanning electron microscopy. Pertechnetate with Tc-99m isotope was quantitated by gamma scintillation counting techniques. Three kinetic models (the pseudo-first, the pseudo-second order and intraparticle diffusion) were used to determine the best-fit equation for pertechnetate sorption.