



Contribution ID: 183

Type: Oral

## Ion beam modification of polymer nanocomposites using Au ion implantation

*Tuesday, 1 September 2015 16:45 (15 minutes)*

Ion implantation is a powerful tool for the modification of polymers. The studied materials contain a mixture of diglycidylether of bisphenol A (DGEBA) and monoglycidylether terminated poly(dimethylsiloxane) (GE-PDMS) or diglycidylether terminated poly(dimethylsiloxane) (DG-PDMS) in 98/2 wt.% reinforced with 10 wt.% POSS-octa(3 glycidyloxypropyl)dimethylsiloxy (OEP-POSS). The presence of Au ions in the structure of these materials can have drastic effects on the electrical, mechanical and chemical properties. In this study we present the modification of mechanical properties after 1.6 MeV Au<sup>+</sup> implantation of nanocomposites at a dose of 5.5e15 ions/cm<sup>2</sup>. The polymers were examined by different methods: Thermogravimetric analysis (TGA), Dynamic mechanical analysis (DMA), Rutherford Backscattering Spectrometry (RBS) and Atomic Force Microscopy (AFM). Nanoindentation and AFM gave information regarding the hardness and topography while RBS gave information regarding the Au presence in the samples. The work of Nicoleta Mihaela Florea has been funded by the Sectoral Operational Programme Human Resources Development 2007-2013 of the Ministry of European Funds through the Financial Agreement POSDRU/159/1.5/S/132397.

**Primary author:** BURDUCEA, Ion (Horia Hulubei National Institute of Physics and Nuclear Engineering IFIN-HH)

**Co-authors:** Dr IONESCU, Cristina (1Horia Hulubei National Institute of Physics and Nuclear Engineering IFIN-HH, 30 Reactorului St, Magurele, Ilfov 077125, Romania); Dr CRACIUN, Liviu Stefan (Horia Hulubei National Institute of Physics and Nuclear Engineering IFIN-HH, 30 Reactorului St, Magurele, Ilfov 077125, Romania); Dr STRATICIUC, Mihai (1Horia Hulubei National Institute of Physics and Nuclear Engineering IFIN-HH, 30 Reactorului St, Magurele, Ilfov 077125, Romania); Dr FLOREA, Nicoleta Mihaela (1Horia Hulubei National Institute of Physics and Nuclear Engineering IFIN-HH, 30 Reactorului St, Magurele, Ilfov 077125, Romania 2University Politehnica of Bucharest, Faculty of Applied Chemistry and Materials Science, 1-7 Gh. Polizu Street, 011061, Bucharest, Romania)

**Presenter:** BURDUCEA, Ion (Horia Hulubei National Institute of Physics and Nuclear Engineering IFIN-HH)

**Session Classification:** Nuclear Physics Applications II