Contribution ID: **290** Type: **Poster Presentation**

Cryogenic ion implantation of Polyethylene Terephthalate thin films: structural and electrical properties

Thursday, 11 July 2019 15:00 (2 hours)

Polymer based nanocomposites have attracted a lot of attention in the semiconductor industry for many different applications such as sensors, solar cells, lighting and display, to name a few. Polyethylene Terephthalate (PET), an insulating polymer with electrical conductivity of up to 10-15 S.m-1 shows desirable electrical characteristics after ion implantation. In this work, 100keV Ti+ and Ar+ ions were cryogenically implanted into Polyethylene Terephthalate (PET) foils of about 130 μm thickness. The PET samples were then characterized using Fourier-Transform Infrared (FTIR) Spectroscopy to determine the chemical and molecular structure of implanted species. UV-Vis was carried out to determine the electronic band gap and XRD to determine the crystallinity. The electrical properties of the implanted PET were investigated through current-voltage (I-V) measurements. This presentation describes and explains results of the characterisation measurements with a view to establishing structure-property relationships of the cryogenically implanted PET. The ultimate goal of this study is develop polymer based nanocomposites for applications in nuclear and solar radiation sensor devices.

Apply to be
 considered for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD, N/A)?

MSc

Primary author: Ms MOTAUNG, Gaopalelwe (University of South Africa)

Co-authors: Dr MSIMANGA, Mandla (Tshwane University of Technology); Mr MOLOI, Sabata (University of South Africa)

Presenter: Ms MOTAUNG, Gaopalelwe (University of South Africa)

Session Classification: Poster Session 2

Track Classification: Track A - Physics of Condensed Matter and Materials