Contribution ID: **90** Type: **Oral Presentation**

Semiconducting quantum dots: emerging materials for photovoltaics

Thursday, 12 July 2012 15:10 (20 minutes)

Abstract content
   (Max 300 words)

Quantum dots solar cells are an emerging field in solar cell research. Due to their intrinsic properties arising from quantum confinement effects, solar cells based on quantum dots have promising prospects in producing photovoltaics with high efficiencies. Contributing to the probability of producing cheap, high efficient photovoltaics is their ability to have tunable band-gaps, generate multiple excitons and to extract hot carriers. Their ease of synthesis and functional surfaces makes it possible for quantum dots to be conjugated to other materials which could result in further improvement of the efficiencies. Quantum dots are easily processable as they can dissolve in many solvents, be made into thin films, embedded into polymers and etc., and hence would result in cheaper production costs. Herein we report on the synthesis and characterization of high quality quantum dots using novel synthetic methods. Furthermore, we report on the fabrication of solar cell devices of various architectures.

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Primary author: Dr MOLOTO, Nosipho (University of the Witwatersrand)

Presenter: Dr MOLOTO, Nosipho (University of the Witwatersrand)

Session Classification: DCMPM2

Track Classification: Track A - Division for Condensed Matter Physics and Materials