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NATUUR- EN
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Contribution ID: 79

Type: Oral Presentations

VO₂ nanorod as a new candidate for near infrared light harvesting

Wednesday, 6 May 2015 11:20 (20 minutes)

Vanadium dioxide (VO₂) thermochromic properties have been widely applied in many devices in an attempt to solving the world energy crises. One of such devices is thermochromic/switchable/smart window, an energy saving window which is transparent to infrared light with high refractive index above 70 degree C (the transition temperature of VO₂) and refracts infrared light with low refractive index below this temperature. In this current attempt, we have investigated the potentials of VO₂ nanorod structure for near infrared light harvesting by coating the material on p-type Si wafers using a simple doctor blading method. The n-VO₂|p-Si solar cell was annealed at 70 degree C and tested with a SF 150 small beam simulator by SCIENCETECH Inc. from Ontario Canada.

Photon power conversion efficiency (PCE) was calculated from the values of the open-circuit voltage (V_{oc}), fill factor (FF), and short-circuit current density (J_{sc}), and a decreasing trend of PCE was observed with the photon power.

Are you currently a postgraduate student? (Yes/No)

Yes

At what level of studies are you currently? (Hons/MSc/PhD)

MSc

Please provide the name and email address of your supervisor.

Dr Bonex Mwakikunga bmwakikunga@csir.co.za

Primary author: Mr AKANDE, Amos (Dept. of Physics, University of Limpopo, DST/CSIR National Centre for Nano-Structured Materials, P O Box 395, Pretoria 0001, South Africa)

Co-authors: Dr MWAKIKUNGA, Bonex (CSIR National Laser Centre); Dr RAMMUTLA, Erasmus Koena (University of Limpopo)

Presenter: Mr AKANDE, Amos (Dept. of Physics, University of Limpopo, DST/CSIR National Centre for Nano-Structured Materials, P O Box 395, Pretoria 0001, South Africa)

Session Classification: Presentations

Track Classification: SACPM