

# Renewable Energy & Emerging Technologies

October 05-06, 2018  
Barcelona, Spain

Trends in Green chem 2018, Volume 4  
DOI: 10.21767/2471-9889-C3-015

## CONTROL DOPING OF COLLOIDAL PBS QUANTUM DOT VIA UV TREATMENT FOR HIGH PERFORMANCE SOLAR CELLS APPLICATION

**Srikanth Reddy Tulsani** and **Arup Kumar Rath**

CSIR - National Chemical Laboratory, India

**C**olloidal quantum dot (PbS-CQD) optoelectronics offers a compelling combination of low cost, large area solution processing, and spectral tunability through the quantum size effects. Control doping of the CQD solids is of critical importance to achieve high depletion region and efficient extraction of photo generated carriers. In this work we used ultraviolet-ozone (UVO) treatment to the PbS-CQD layers for control p-doping. The brief UVO treatment leads to considerable performance improvement

of the solar cell devices, whereas excessive UVO treatment found to reduce the device performance. The brief UVO treatment (<1 min) leads to mild oxidation of the CQDs film surface, this allowed to enhance the  $V_{oc}$  and FF of the device. The increase in the photocurrent of the device after the ozone treatment leads to the higher power conversion efficiency compared with the without ultraviolet-ozone treatment.

tulsanisrikanth@gmail.com