

Abstract Submitted
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Visible Light Photoelectrochemical Performance of Zinc Oxide Nanotube-Nanorod Hybrid Structure. GIWAN KATWAL, B MANMADHA RAO, OOMMAN VARGHESE, Univ of Houston — Zinc oxide (ZnO) is a scientifically and technologically important functional material that finds applications in a wide range of fields including electronics, optoelectronics and photovoltaics. It is a low cost, abundant and non-toxic material and hence, it is one of the most appropriate materials for sustainable processes such as solar energy conversion. Nevertheless, the bandgap of ZnO is about 3.37 eV and as a result it can absorb radiations in the ultraviolet range only. We have recently developed a ZnO nanotube-nanowire architecture through a sustainable process that consists of anodization of zinc in a non-toxic electrolyte. We have successfully engineered the band gap of this nanomaterial, which resulted in a dramatic improvement in the visible light photoactivity of the material. We will discuss the details of this study and the performance of the material as a photoanode for photoelectrochemical water splitting.

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