Abstract Submitted
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A photoelectrochemical (PEC) study on graphene oxide based hematite thin films heterojunction (R-GO/Fe_2O_3) POONAM SHARMA, Dept of Physics & Comp Science, Dayalbagh Educational Institute, Agra, India, MICHAEL ZACHARIAH, Dept of Mechanical Engineering, UMCP, Maryland, SHERYL EHRMAN, Dept of Chemical Engineering, UMCP, Maryland, ROHIT SHRIVASTAVA, SAHAB DASS, Dept of Chem, Dayalbagh Educational Institute, Agra, India, VIBHA R. SATSANGI, Dept of Physics & Comp Science, Dayalbagh Educational Institute, Agra, India, MICHAEL ZACHARIAH, SHERYL EHRMAN COLLABORATION, ROHIT SHRIVASTAVA, SAHAB DASS COLLABORATION, VIBHA R SATSANGI, POONAM SHARMA TEAM — Graphene has an excellent electronic conductivity, a high theoretical surface area of 2630 m^2/g and excellent mechanical properties and, thus, is a promising component for high-performance electrode materials. Following this, GO has been used to modify the PEC response of photoactive material hematite thin films in PEC cell. A reduced graphene oxide/iron oxide (R-GO/Fe_2O_3) thin film structure has been successfully prepared on ITO by directly growing iron oxide particles on the thermally reduced graphene oxide sheets prepared from suspension of exfoliated graphene oxide. R-GO/Fe_2O_3 thin films were tested in PEC cell and offered ten times higher photocurrent density than pristine Fe_2O_3 thin film sample. XRD, SEM, EDS, UV-Vis, Mott-Schottky and Raman studies were carried out to study spectro-electrochemical properties. Enhanced PEC performance of these photoelectrodes was attributed to its porous morphology, improved conductivity upon favorable carrier transfer across the oxides interface.

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