Abstract Submitted
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Enhanced efficiency in dye sensitized solar cells using reduced graphene oxide-TiO_2 nanocomposites SOUMITRA SATAPATHI, Center for Advanced Materials and Department of Physics, University of Massachusetts Lowell, LIAN LI, RAVI MOSURKAL, LYNNE SAMUELSON, US Army Natick Soldier Research, Development & Engineering Center, Natick, Massachusetts, JAYANT KUMAR[1], Center for Advanced Materials and Department of Physics, University of Massachusetts Lowell — Graphene, in the last few years, has elicited considerable interest for its remarkable electronic and optical properties. It has possible applications in the fabrication of organic solar cells, single molecule sensing and field effect transistors. Here, we, report the synthesis of graphene oxide starting from graphite nanoplatelets using Hammer's method. Subsequently, graphene oxide was reduced by hydrazine to obtain chemically reduced graphene oxide. The reduced graphene oxide-TiO_2 nanocomposites were prepared by physically mixing Triton-X stabilized reduced graphene aqueous dispersion and TiO_2(P25) nanoparticles. Dye-sensitized solar cells (DSSC) were fabricated. It was observed that incorporation of 1wt% graphene into TiO_2 leads to 16% enhancement of overall power conversion efficiency.

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