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HYDROGENATED GRAPHENE- METAL OXIDE NANOHYBRIDS: AN INVENTIVENESS PLINTH FOR SENSING DEVICES P

BARANEEDHARAN, S. RAMAPRABHU, Indian Institute of Technology Madras — Graphene- a two dimensional sheet of sp^2 hybridized carbon atoms has been considered as promising materials in sensor design for detection of target molecule. Charge carriers in graphene obey linear dispersion relation and it behaves like mass less relativistic particles which act as base for enhanced electron transport. Thus the electrons move ballistically without scattering giving higher mobility even at room temperature. Further, the presence of oxygen containing functional group and crystal defects assisted via hydrogenation process take vital part in electrochemical adsorption of electro active species and catalyses the same. Though issues with selectivity, stability and sensitivity are limited for several nanostructured metal oxides sensing, the hybrid system started its effective role in design of sensing platform. Thus considering the potential important of hydrogenated graphene -metal oxide systems, a nanohybrid system is developed and its structural, morphological and optical properties were understood using respective characterization tool. Further, the prepared hybrid nanosystem used as a platform for bimolecule detection, where the sensor exhibits higher range of sensitivity and selectivity.

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