STUDY OF PHOTOCATALYTIC DEGRADATION OF ORGANOTIN ADSORBED ON NANOCOMPOSITES

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Abstract: Aquatic pollution coming from extensive usage of organotin compounds has been of great concern due to its deleterious effects on non target organisms. Carbon nanotubes (CNTs) and graphene (GR) have stirred widespread attention as a new type of adsorbents due to their outstanding ability to remove various inorganic and organic pollutants—and radionuclides from large volumes of wastewater. Their application as adsorbents for the pre-concentration and immobilization of all kinds of pollutants from gas streams and large volumes of aqueous solutions are very promising. However, it’s very important to determine how to remove or deactivate this pollution from nanocompounds. A series of carbon nanotubes (CNTs) and graphene (GR) modified with TiO2 nanocomposites were prepared by two methods: hydrothermal, and sol-gel. Nanocomposites contained various amount of CNTs and GR. The numerous methods, such as X-ray diffraction, FTIR, TEM, UV-Vis spectroscopy, photoluminescence and electrochemical impedance spectra were used to characterize prepared composite materials. The results reveal that incorporating TiO2 with carbon materials can extend the adsorption edge for all of the TiO2-carbon nanocomposites to the visible light region. The photocatalytic activities were tested for degradation of organotins under visible light. Degradation compounds were analyzed by GC-MS.

Keywords: Carbon nanotubes, graphene, organotins, TiO2

Acknowledgments: This work was supported by the Marie-Curie International Research Staff Exchange Scheme via the Grant No. PIRSES-GA-2011-295128; and co-financed by the European Social Fund.”, National Science Foundation, award NSF EPSCoR # 362492-190200-01\NSFEPS-0903787and NSF-CREST# HRD 0833178