

Abstract Submitted  
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**Utilization of Metal Oxides and Chalcogenides Stabilized in Organic Solvents** LESTER LAMPERT, ROBBY FLAIG, JORGE CAMACHO, JAMES HAMILTON, University of Wisconsin-Platteville — Metal oxides and metal chalcogenides are important materials for a variety of applications including photocatalysis for decomposition of water, conductive and optical coatings, catalysts, photovoltaics, pyroelectrics, self-cleaning surfaces, pigments, and high efficiency Li-insertion materials in batteries among many other applications. Fundamental discoveries of surprising solubility of insoluble materials such as single and multi-walled carbon nanotubes and graphene has lead us to discover that certain metal oxides and metal chalcogenides such as TiO<sub>2</sub> are soluble in certain solvents. Due to the industrial importance of TiO<sub>2</sub>, discovering stable pure solvent systems demonstrates a possibility to avoid surface modification of TiO<sub>2</sub> nanoparticles by use materials such as of (3-methacryloxypropyl)-trimethoxysilane and various other methods of artificial stabilization. We have created thin films of TiO<sub>2</sub>, transparent ultraviolet (UV) –absorptive polymers, and Li-ion battery anodes with graphene-TiO<sub>2</sub> hybrid materials.

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