CHANGES IN ELECTRICAL CONDUCTANCE OF TITANIUM OXIDE PHOTOCATALIST CAN BE USED TO QUANTIFY THE DESTRUCTION OF A MODEL DYE TARGET. Paulo Leon-Silva[1,2], Jorge Torres[1,2], James Sweeney[1,2], Jonathan Shute[1,2], Vincent Rosa[1,2], Patricia Barreto[1,3], Shane Finn[1,3], Branko Bulakovski[1,2], Jose Barreto[1,3]. Green Technology Research Group (GTRG)[1], Departments of Bioengineering[2] and Chemistry[3], Florida Gulf Coast University, 10501 FGCU Boulevard South HE331, Fort Myers, Fl 33965.

The destruction of dyes on the surface of a photoctalyst models toxin destruction. Photocatalytic destruction of adsorbed dyes proceeds when radicals, oxidants, and reductants are produced by ultraviolet light. We measured changes in TiO2 conductance covered with a layer of Sudan Red dye. Photobleaching of the Sudan Red was also assessed by spectrophotometric reflectance measurements. During conductance measurements, a voltage of 2V was applied to the TiO2 coating and the resulting current was measured. The coating was exposed to ultraviolet light for consecutive periods of 20 minutes. At the end of each period, reflectance and current measurements were obtained. After the first 20 minute period, electrical current steadily increased back to its base value for titanium oxide alone. This progressive increase followed the reflectance recovery as the photobleaching took place. We conclude that electrical current measurements can be used as a simple means to assess analyte decomposition by photocatalysis.