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**EXPERTISE**

Photocatalysis, Materials Chemistry

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Associate Professor Dr. Abdul Halim Abdullah's major research areas involve the synthesis, characterization and utilization of nanomaterials for environmental catalysis. The work involves synthesizing nanosize zinc oxide via various methods of preparation, modifying the metal oxide through doping and hybridizing the zinc oxide with other metal oxides and characterizing the resulting catalysts. The synthesized catalysts were applied for photodegradation of various organic pollutants such as dyes, pesticides and phenolic compounds from aqueous solution to produce harmless by-products. The focus of his work has included treating industrial wastewater samples. He has authored and co-authored more than 40 technical papers. Major sponsors of his research include the Science Fund (Ministry of Science and Innovation of Malaysia (MOSTI), Fundamental Research Grant Scheme (FRGS) and Research University Grant Scheme (RUGS).

**CURRENT RESEARCH INTERESTS:**

- **Photodegradation of organic pollutants by visible light driven photocatalysts.**

Photodegradation of organic pollutants by visible light driven photocatalysts has been of current interest in an attempt to make use of solar radiation as the light source. Our current work involves synthesizing ZnO based photocatalysts via simple chemical processes. The ZnO based catalysts prepared include ZnO/CNT, ZnO/graphene oxide and ZnO/Ag<sub>3</sub>PO<sub>4</sub> photocatalysts. The photocatalytic activity of resulting catalysts were evaluated by photodegrading dyes as the model pollutant. Wastewater effluent from the textile industry was also used to determine the efficiency of the photocatalyst to photodegrade real wastewater. Preparation of thin film photocatalysts is also attempted by immobilizing the photoactive catalyst on a polymer matrix. The performance of the thin film photocatalyst is targeted to be at least on par with that of the powdered catalyst in the photodegradation of organic pollutants

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**LINK TO POSTGRADUATE FIELD OF STUDY:**

Catalysis, Analytical Chemistry, Nanomaterials

**ADDITIONAL INFORMATION:**