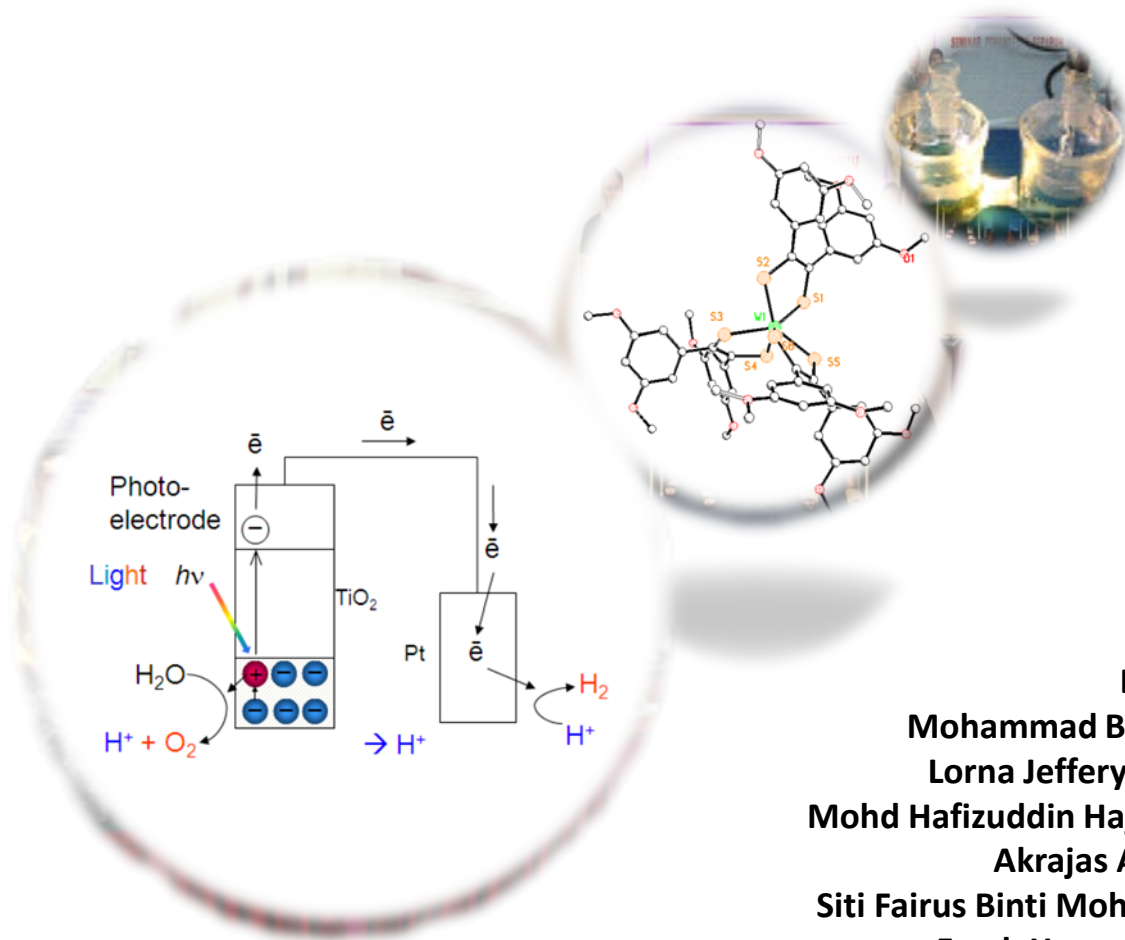


PROGRESS IN PHOTOELECTROCHEMICAL RESEARCH 2012



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SOLAR HYDROGEN GROUP

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Foreword

Solar Hydrogen group focuses on research and development to enhance the performance of heterogeneous photocatalyst and photoreactor to directly split water to give hydrogen and oxygen gas using solar energy. The research projects involve designing and synthesizing sensitizer molecules; development of photoelectrode; development of photoreactor incorporating the photoelectrode for water splitting and testing of the integrated system under simulated or real conditions.

This book consists of a collection of short papers from Solar Hydrogen researches at the Fuel Cell Institute and Faculty of Science and Technology, UKM. The information reported in these papers is new and supports the master plan and the research direction of Solar Hydrogen research group. In addition, the research programme is also working along the direction of the Fuel Cell and Hydrogen Technology programme for the Renewable Energy Niche.

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Mohammad B. Kassim

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Design and Synthesis of Bis-Benzoylthioureas Compounds Linked with Azobenzene Scaffold

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Abstract

A series of azo-benzoylthioureido compounds were successfully synthesized through the reaction between 2,2'-diaminoazo-benzene (DAAB) with benzoyl isothiocyanate, 4-chlorobenzoyl isothiocyanate and *p*-toluoylisothiocyanate. The compounds were characterized by infrared (IR) and UV/Vis spectroscopy and CHNS microelemental analysis. The seazo-benzoylthioureido compounds maybe further applied as anions detector.

Keywords: Azo-benzoylthioureidocompounds, 2,2'-diaminoazo-benzene (DAAB), anions detector

Introduction

Azo compounds are the oldest and largest class of synthesized organic dyes due to their versatile application in various fields, such as dyeing textile fiber, biomedical studies, advanced application in organic synthesis and high technology areas such as laser, liquid crystalline displays, electro-optical devices and ink-jet printers (Gür et al. 2007) The main azo dyes used all over the world is the monoazo compounds, which has the common structure unit of the azochromophore, -N=N-, linking two aromatic systems. The azo compounds are mainly being used as dyestuffs in the textile industry. Although some azo dyes have been reported to be toxic, dozens of additional monoazo dyes are permitted in drugs and cosmetics. The pharmaceutical importance of the compounds including an arylazo group has been extensively reported in the literature (Albayrak et al. 2009).

On the other hand, the study of thiourea derivatives has drawn the attention of researchers due to their importance in chemistry and biology fields. One of the specific uses of thiourea, which is due to its strong antifungal activities, is used to control plant pathogenic fungi (Campo et al. 2002; Campo et al. 2004; Criado et al. 1998; Rodríguez-Fernández et al. 2005; Truong et al. 2004; Weiqun et al. 2005). In addition, thiourea derivatives are promising antitumor agents (Faidallah et al. 2007). Other thiourea derivatives such as benzoylthiourea have high tendency to form complexes with transition elements through their Ph-CO-NH-CS-N chelating group.

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