SUBMISSION FOR EVALUATION
FINAL YEAR PROJECT 2 – CRITICAL REVIEW

RECENT UPDATES ON $BiVO_4$ BASED MATERIALS FOR VARIOUS PHOTOCATALYTIC APPLICATIONS AND HYDROGEN PRODUCTION

Name	:	Nujmatul Huda Binti Aharul Hadafi
Student ID	:	2022882078
Program	:	AS222
Course code	:	FSG631
Mobile Phone	:	
E-mail	:	2022882078@student.uitm.edu.my

Approval by Main Supervisor:

I certify that the work conducted by the above student is completed and approve this research proposal report to be submitted for evaluation.

Supervisor's name	:	Prof Madya Dr. Wan Izhan Nawawi Wan Ismail
Date	:	12 February 2026
Turnitin Similarity %	:	8%
AI Writing %	:	* %
Signature	:	

RECENT UPDATES ON $BiVO_4$ BASED MATERIALS ON SURFACE AREA MODIFICATION WITH VARIOUS PHOTOCATALYTIC APPLICATIONS AND HYDROGEN PRODUCTI

NUJMATUL HUDA BINTI AHARUL HADAFI

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Universiti Teknologi MARA

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This Final Year Project Report entitled " Recent Updates on $BiVO_4$ Based Materials on Surface Area Modification with Various Photocatalytic Applications and Hydrogen Production**"** was submitted by Nujmatul Huda Binti Aharul Hadafi in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Chemistry With Management, in the Faculty of Applied Sciences, and was approved by

_____

Prof Madya Dr. Wan Izhan Nawawi Wan Ismail
Supervisor
B. Sc. (Hons.) Chemistry With Management
Faculty of Applied Sciences Universiti Teknologi MARA
02600 Arau
Perlis

_____	_____
Farhana binti Othman Project Coordinator B. Sc. (Hons.) Chemistry With Management Faculty of Applied Sciences Universiti Teknologi MARA 02600 Arau Perlis	Dr Nur Nasulhah binti Kasim Head of Programme B. Sc. (Hons.) Chemistry With Management Faculty of Applied Sciences Universiti Teknologi MARA 02600 Arau Perlis

Date: _____

ABSTRACT

RECENT UPDATES ON $BiVO_4$ BASED MATERIALS ON SURFACE AREA MODIFICATION WITH VARIOUS PHOTOCATALYTIC APPLICATIONS AND HYDROGEN PRODUCTION

Presently, an increasing number of studies have been conducted on bismuth vanadate ($BiVO_4$), acting as semiconductor photocatalyst to deal with environmental and energy-related problems. Though numerous benefits have been introduced, it seems that there are some drawbacks on bismuth vanadate especially toward its surface area alteration. Therefore, an increasing number of reviews have been made, discussing different modifications, to find an effective solution to overcome its restrictions while improving the photocatalytic properties of $BiVO_4$. In this review, all updates on recent studies have been comprehensively summed up, including the modification to improve its surface area, light absorbency, overcome charge recombination, as well as minimize the band gap energy on $BiVO_4$. In addition, comparison studies have also been done to identify methods that provide more advantages in terms of eco-friendly, save resources, save cost and time effectiveness. Besides that, synopsis of $BiVO_4$- based photocatalyst related photodegradation and hydrogen application also highlighted in this review to conclusively provide comprehensive understanding on restrictions of $BiVO_4$ materials. Thus, through their modification abilities in overcoming each limitation, helping numerous researchers to establish a better framework to produce effective photocatalysts on $BiVO_4$ pertaining to the environment, especially in waste water remediation and energy aspects.

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