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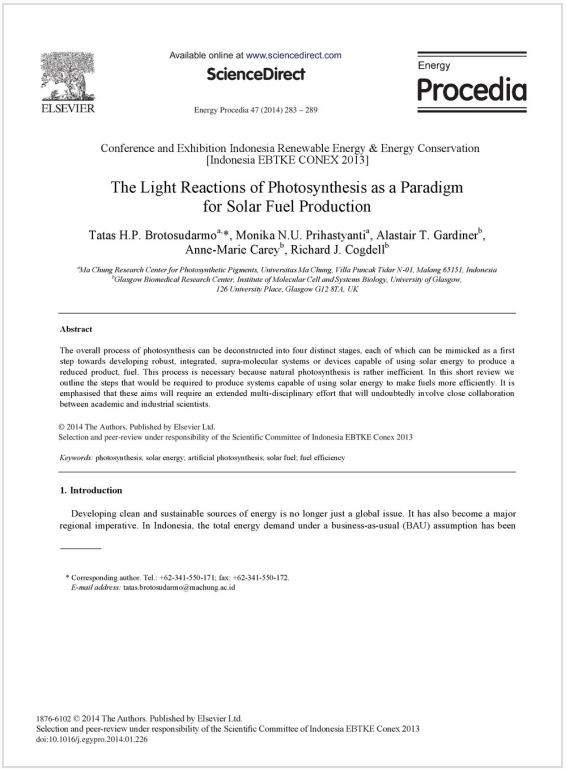

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Conference and Exhibition Indonesia Renewable Energy & Energy Conservation
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The Light Reactions of Photosynthesis as a Paradigm for Solar Fuel Production

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Abstract

The overall process of photosynthesis can be deconstructed into four distinct stages, each of which can be mimicked as a first step towards developing robust, integrated, supra-molecular systems or devices capable of using solar energy to produce a reduced product, fuel. This process is necessary because natural photosynthesis is rather inefficient. In this short review we outline the steps that would be required to produce systems capable of using solar energy to make fuels more efficiently. It is emphasised that these aims will require an extended multi-disciplinary effort that will undoubtedly involve close collaboration between academic and industrial scientists.

Selection and peer-review under responsibility of the Scientific Committee of Indonesia EBTKE Conex 2013

Keywords: photosynthesis; solar energy; artificial photosynthesis; solar fuel; fuel efficiency

1. Introduction

Developing clean and sustainable sources of energy is no longer just a global issue. It has also become a major regional imperative. In Indonesia, the total energy demand under a business-as-usual (BAU) assumption has been

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1876-6102 © 2014 The Authors. Published by Elsevier Ltd.
Selection and peer-review under responsibility of the Scientific Committee of Indonesia EBTKE Conex 2013
doi:10.1016/j.egypro.2014.01.226

The light reactions of photosynthesis as a paradigm for Solar fuel production, Energy Procedia, 2014, 47, 189 – 195, Hal. 283-289

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