LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : PROSIDING

Judul Karya Ilmiah	:	Synthesis of Ca/MgO catalyst using sol gel method for monoglycerides production		
Jumlah Penulis	:	4 Orang (Didi Dwi Anggoro, Luqman Buchori, **Setia Budi Sasongko,** Mahmed Vincent A.A.F.F.)		
Status Pengusul	:	Penulis ke-3		
Identitas Prosiding	:	a. Judul Prosiding	:	Proceedings of the 4th International Conference on Engineering, Technology, and Industrial Application (ICETIA) 2017
		b. ISBN/ISSN	:	978-0-7354-1687-1
		c. Thn Terbit, Tempat Pelaks.	:	2017, Surakarta, Indonesia
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c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	7,00	8,00	7,50
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Total = (100%)	**25,00**	**26,50**	**25,75**
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Semarang, 31 Agustus 2020

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Prof. Dr. Istadi, S.T., M.T.
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Prof. Dr. Moh. Djaeni, S.T., M.Eng.
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c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9,00		7,00
d. Kelengkapan unsur dan kualitas terbitan/prosiding(30%)	9,00		9,00
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Nilai Pengusul = (40% x 25,00)/3 = 3,33			

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1. **Kesesuaian dan kelengkapan unsur isi paper:**
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2. **Ruang lingkup dan kedalaman pembahasan:**
   Penilitian ini membahas introduksi kalsium pada katalis MgO untuk meningkatkan tingkat kebasaan katalis sebagai upaya meningkatkan yield produk monogliserida. Hasil menunjukkan bahwa dengan katalis yang dimodifikasi tersebut peningkatan produk menjadi sangat tinggi. Meskipun demikian, klaim ini tidak ditunjang dengan data-data yang memadai. Pembahasan pun singkat dan kurang komprehensif aspek-aspek yang ditinjau.
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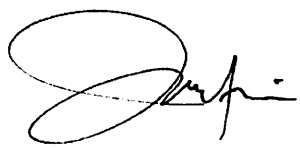

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NIP. 197103011997021001
Unit Kerja : Dept. Teknik Kimia FT UNDIP

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4th International Conference on Engineering, Technology, and Industrial Application: Human-Dedicated Sustainable Product and Process Design: Materials, Resources, and Energy, ICETIA 2017; Alila HotelSurakarta, Central Java; Indonesia; 13 December 2017 through 14 December 2017; Code 137482

Synthesis of Ca / MgO catalyst using sol gel method for monoglycerides production (Conference Paper)

Anggoro, D.D. ✉, Buchori, L., Sasongko, S.B., Mahmed Vincent, A.A.F.F.

Department of Chemical Engineering, Faculty of Engineering, Universitas Diponegoro, Prof. Soedarto SH Road, Tembalang, Semarang, Indonesia

Abstract

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This paper discusses Ca -doped MgO catalysts using Sol - Gel method . The doping of Ca is expected to increase the basicity of the catalyst . The basicity of catalyst has effect on the monoglycerides production by glycerolysis reaction. The Ca / MgO catalyst was prepared by sol gel method by using solution as a precursor. This method was expected to produce a more homogeneous mixture of Mg and Ca . The catalyst was characterized using X-Ray Diffraction (XRD) and the basicity was analyzed using Hammett titration method . The monoglycerides yield was analyzed using Gas Chromatography Mass Spectrometry (GC/MS). Based on Hammett's titration method , the basicity value was calculated in which the largest value was obtained by the dopant concentration of 2% Ca and calcination temperature of 800°C. The 2% Ca / MgO catalyst that has the highest basicity value was tested for the production of monoglycerides through glycerolysis reaction. This reaction carried on the conditions of 200°C, the catalyst amount of 0.1% weight of oil, the ratio of glycerol: oil = 3: 1, reaction time of 3 hours, and stirring speed of 700 rpm. The composition of monoglyceride on oil phase product was 100%, while without catalysts composition was 7.43%. © 2018 Author(s).

SciVal Topic Prominence

Topic: Transesterification | Cooking Fats and Oils | Rubber Seed Oil

Prominence percentile: 99.868

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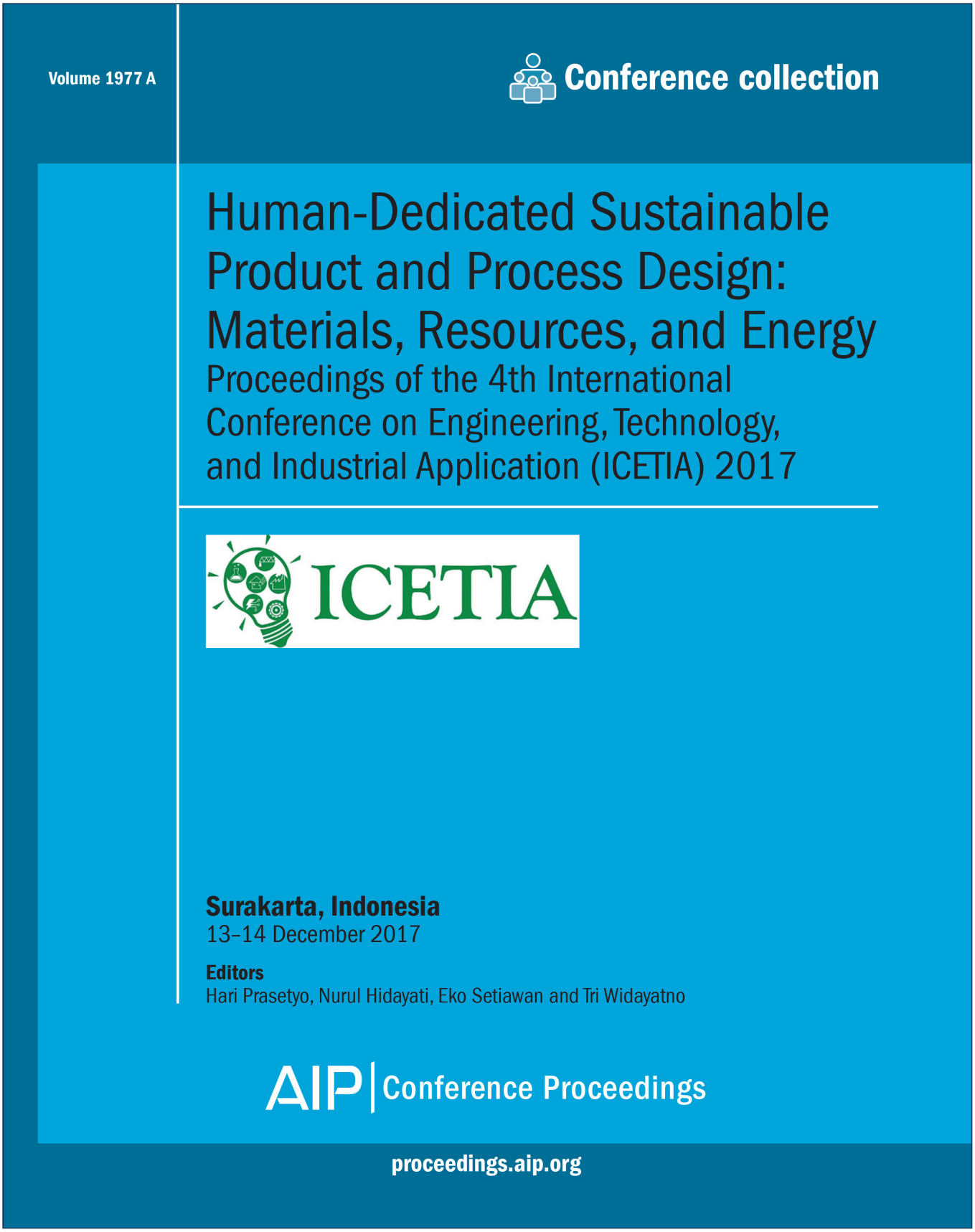

June 2018

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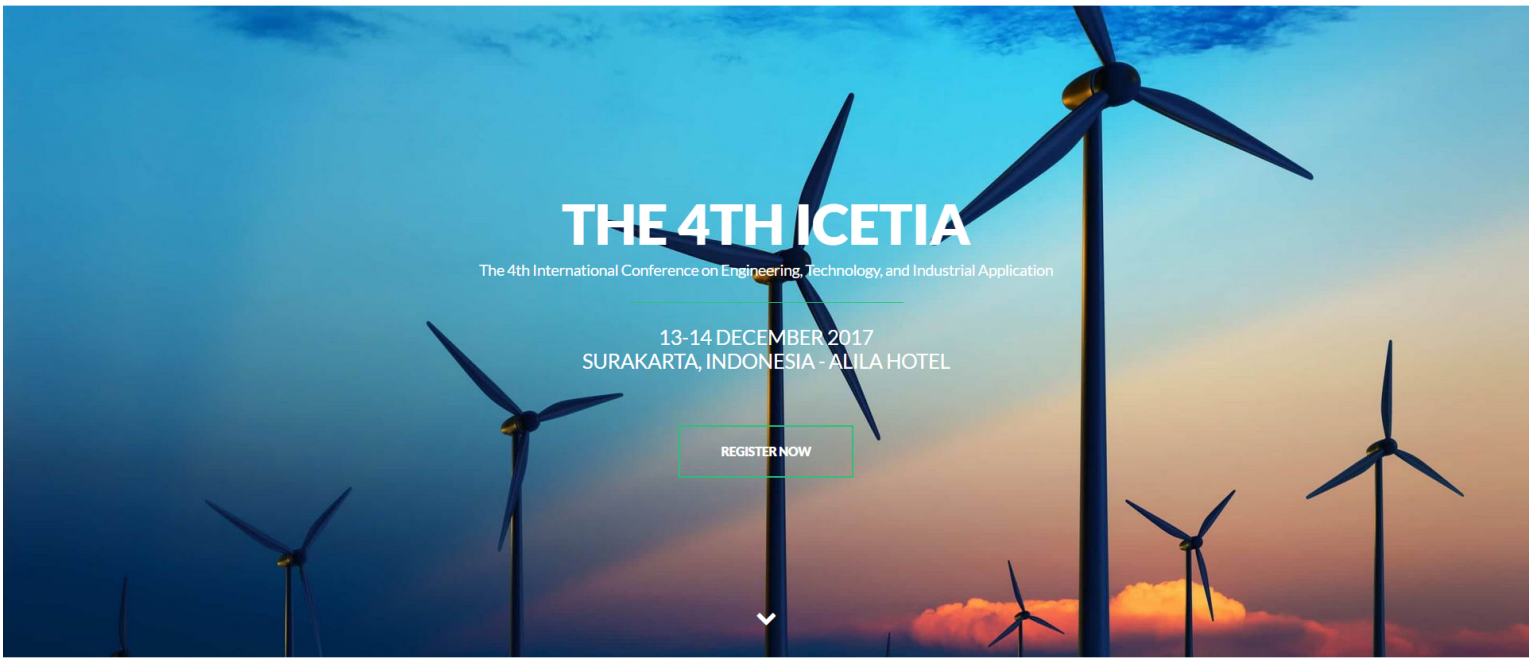

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~~Sept 30th, 2017~~ Oct 28th, 2017	Full Paper Submission Deadline
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Volume number: 1977
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Didi Dwi Anggoro, Luqman Buchori, Setia Budi Sasongko and Mahmed Vincent A. A. F. F.

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AIP Conference Proceedings **1977**, 030035 (2018); https://doi.org/10.1063/1.5042955

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Augmented reality T-shirt for product promotion

Hardika Dwi Hermawan, Agatha Saputri and Hafizhah

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Hana Wardani Puruhita

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Winarto Winarto, Herry Oktadinata and Eddy S. Siradj

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Synthesis of Ca/MgO Catalyst Using Sol Gel Method for Monoglycerides Production

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Abstract. This paper discusses Ca-doped MgO catalysts using Sol-Gel method. The doping of Ca is expected to increase the basicity of the catalyst. The basicity of catalyst has effect on the monoglycerides production by glycerolysis reaction. The Ca/MgO catalyst was prepared by sol gel method by using solution as a precursor. This method was expected to produce a more homogeneous mixture of Mg and Ca. The catalyst was characterized using X-Ray Diffraction (XRD) and the basicity was analyzed using Hammett titration method. The monoglycerides yield was analyzed using Gas Chromatography Mass Spectrometry (GC/MS). Based on Hammett's titration method, the basicity value was calculated in which the largest value was obtained by the dopant concentration of 2% Ca and calcination temperature of 800^0C. The 2% Ca/MgO catalyst that has the highest basicity value was tested for the production of monoglycerides through glycerolysis reaction. This reaction carried on the conditions of 200^0C, the catalyst amount of 0.1% weight of oil, the ratio of glycerol : oil = 3 : 1, reaction time of 3 hours, and stirring speed of 700 rpm. The composition of monoglyceride on oil phase product was 100%, while without catalysts composition was 7.43%.

INTRODUCTION

Monoglycerides is a product with high economic value and the global market of monoglycerides is quite prospective in the future. The monoglycerides used as emulsifiers are about 132,000 ton/year. The functions of monoglycerides are as emulsifiers, emollients, lubricants, and dispersant. The monoglycerides are also applied in the food, pharmaceutical, cosmetic, detergent industries [1], oil well drilling [2], textiles [3], packaging [4], plastic processing [5] and construction materials [6].

The most common process to produce monoglycerides is by catalytic reactions [7, 8]. The advantages of catalyst are to support the speed of the reaction at normal temperature and pressure state [9]. The potential catalyst used in the glycerolysis reaction is the heterogeneous base catalysts.

A heterogeneous base catalyst widely used is Magnesium oxide (MgO). The advantages of MgO catalyst are easily used in the synthesis process, easier to control, the abundant availability, and also relatively inexpensive [9]. The activity of the heterogeneous catalyst can be enhanced by the modification of catalyst in the form of composite mixture or catalyst doping. The Calcium (Ca) doping on MgO is expected to increase the basicity, hence it will be more effective in the monoglycerides synthesis process by glycerolysis reaction.

Mguni (2012) concluded that the sol-gel method is one of heterogeneous catalyst material synthesis methods. The advantage of sol-gel method is its easy preparation. The sol gel method uses the precursor solution, hence it produces a more homogeneous mixture of Mg and Ca. This method produces a catalyst with smaller size and larger surface area. Therefore, this study used sol-gel method for synthesis Ca/MgO catalyst.

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Tar Decomposition Over Porous Low-Grade Iron Ore

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Abstract. In the pyrolysis process, tar material may cause operational problems such as pipe plugging, condensation, and tar aerosol formation. Unusual approaching should be introduced to solve carbon deposition over catalyst which was serious problem in tar decomposition process. Porous low-grade iron ore was promising candidate due to cheap material, non-toxic and the carbon deposition could be utilized on ironmaking process. The liquid tar was introduced on the fixed bed of porous ore in the quartz tube reactor with N2 atmosphere at different temperature (500-700^{o}C). Decomposition of tar exhibited similar profiles of H_2 and CO generation which was rising shortly after starting the experiment because ore catalyst still owned high activity and no carbon poisoning. However, the excessive carbon deposition was also occurred simultaneously in the beginning of experiment and caused deactivation of ore catalyst. It means that the carbon deposition within pores ore affected highly to catalyts activity. However, the high carbon content within inactive ore catalyst offered extra benefit in the steel production as raw material by exhibiting high reactivity and lower temperature in reduction process. Therefore, the tar decomposition over porous iron ore was promising catalyst which was cheap, natural resource and reuse of inactive material.

INTRODUCTION

Pyrolysis is the main process for solid fuels utilization such as biomass and coal which generate char, tar and gas product. As by-product, tar contains condensable organic material with high energy matter which may cause operational problem such as pipe blocking, condensation, and tar aerosol formation [1-2]. Therefore, complete decomposition of tar into a major fraction of the gaseous product that integrated with the reactor systems is most essentials research subject in order to enhance the efficiency and cut the operation cost of the pyrolysis process. Several methods have been proposed for removing tar component to increase the gasification process such as physical methods and catalytic reforming [3-5].

It is well known that complete decomposition of tar over several metal catalysts such as Ni, Pt, Rh, and Pd are promising method [6-10]. However, there is still very serious problem related with catalyst deactivation due to carbon deposition. Aznar et al observes that the catalyst activity of typical nickel A is drop into 54% during 35 h experiment time [11]. Beside carbon deposition, high cost for raw material and regeneration method are another problems related with the conventional metal catalyst.

As an alternative to the expensive conventional metal-based catalysts, the catalyst development which based on the natural mineral is strongly needed to solve the problem related to tar material. Iron-based catalyst is one of the candidates which are cheaper than nickel-based catalysts and non-toxic. It has also been reported that iron-oxide-based catalysts such as Fe2O3-Al2O3 could be used effectively for tar decomposition to produce hydrogen [12, 13]. The inactive iron ore catalyst could be excellent raw material in the ironmaking industry which contributes to address the problems about raw material, energy and environment. Therefore, the purposes of this study was to evaluate the activity of porous ore in tar decomposition process.

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The Influence of Container Material Conductivity to Sea Water Evaporation

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Abstract. Water has become a problem of great interest worldwide. Many researchers have done interesting work to convert sea water into fresh water by various methods, one of them with solar-still. Nevertheless, no studies have examined the effect of conductivity thermal of material on the evaporation of seawater in solar-still. Therefore, this study was conducted to determine the influence of conductivity on sea water evaporation. The study was conducted in Jakarta using sea water that is taken from offshore of Ujung Kulon, West Java, Indonesia. Materials used in this research were rubber, plastic, stainless steel, and copper. The tested material was used as a container to accommodate sea water to be evaporated. The research was conducted concurrently so that environmental and weather effects could be ignored. The result showed that the temperature of material fell into ambient temperature and did not store heat. The evaporation efficiency with different container material (rubber 3.73%, plastic 3.82%, Stainless steel 4.58%, and copper 4.75%) had risen along with the increase of the conductivity. Thus, it could be concluded that the conductivity of the container material influences the rate of sea water evaporation.

INTRODUCTION

Water is the decisive material in life. Humans, plants, and most animals will not survive without water. Along with the growing population of people living in this earth, water consumption is increasing. The addition of human population as much as 15% will reduce the water source and increase the water shortage by 40% [1], while there is only 2.8% amount of fresh water on the surface of the earth, and the rest is sea water [2]. Thus, sea water is a potential source of fresh water.

Because of its enormous potential, various methods and research have been done to convert sea water into fresh water. Distillation is one of the most widely used methods. Evaporation processes that occur slowly make the contaminants left behind so that the resulting water becomes pure. The distillation process becomes cheaper when done by utilizing solar energy, although the production is not high. The direct heating method with solar heat is the most suitable way to produce fresh water up to 200 m^3/day [3].

The process of distillation by solar heating is generally done by using solar still. Various methods and materials are used to improve the performance of solar still. designed and constructed three solar still that uses packed layer, rotating shaft and conventional one [4]. The packed layer is composed of glass balls on the surface of bottom of still basin. The result shows that the productivity of the packed layer still basin was higher than the other two since the material of the packed layer has higher thermal properties. The use of Portland cement blackened, as heat storage, increases freshwater production by 39% [5]. Hanen Ben Halima, Nader Frikha and Slimane Gabsi use air bubbles to improve evaporation [6]. Concave-shaped solar stills are used to increase evaporation by A. E. Kabeel [7]. The tilted-wick was placed on the surface of the solar still spreading water to the entire surface of the wick through capillary fibers. Therefore, the temperature becomes higher in the thin layer [8]. The perforated aluminum is

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Augmented Reality T-Shirt for Product Promotion

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Abstract. Augmented Reality (AR) has become an essential technology in various sectors. Nowadays, despite the popularity of AR for product promotion and media campaign, the use of printed media, such as books and cards, is still common. In fact, AR T-shirts is one of the innovations of clothing companies to promote their products. This paper was focused on the development of AR applications on T-Shirt that as a method to improve the product and to know the extent of how AR application can survive under various lighting conditions. The model used in developing the AR application was Waterfall Process Model. Lux meter was used to find out how far the camera can detect images on the T-shirt, in which it revealed that through the effect of light intensity, AR application on T-shirt could survive 10.8 lux or above. At light intensity of 10.8 lux, the camera experienced difficulty in tracking picture on the T-shirt. From the test using Lux meter, the result was that AR application could survive from twilight to sunlight. However, this study still requires further research such as the implementation of smartphones, media expert trials, and user testing to cooperate with related industries.

INTRODUCTION

The rapid technological developments and the interactive and exciting innovations have become inseparable elements of the 21st century. Augmented reality (AR) technology is one of the technologies that connect the real and virtual worlds in real-time [1]. With the implementation of AR, the interaction will become more real because the users can interact with virtual objects directly [2]. Currently, the use of AR has been applied into various fields. Some researchers confirmed this technology have been developed in the fields of education, military, medicine, industry, entertainment and marketing [3,4,5,6,7]. Business transformation and market competition growth become the opportunity in industrial realm to create an innovation that can attract people to know specific products or to build brand awareness of the products hence the public will recognize them. The use of proven technology can improve the productivity and create competitiveness of a company [8].

The use of AR as a media campaign and marketing is an appropriate step for the progress of business. Ilhan [1] mentioned that the use of AR for industrial marketing is essential and vital. Furthermore, Citigroup released a report that revealed the AR and VR markets can grow reaching up to $ 2.16 trillion by 2035 in the industrial sectors. In this report, Citygroup also confirms the existence of AR as a disruptive innovation in the next 5-10 years. Currently, some AR products have been in marketing, including Orville Popcorn, ARM [9], Autodesk Showcase 2014, IKEA Catalogue, TryLive and The Artvertiser [10]. In Indonesia, AR has also been implemented in various companies as media campaign, for example, the emergence of Sosro Heritage [11], Gery AR, Taro Adventure, Super Keju Boboiboy Galaxy [12], and AR-Card Jogja Handicraft [4]—which uses AR to promote local products from Yogyakarta. However, the use of integrated AR in the clothing industry has not been popular yet.

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