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

Judul Jurnal Ilmiah (Artikel)	:	Basicity Optimization of KF/Ca-MgO Catalyst using Impregnation Method
Jumlah Penulis	:	4 orang (Didi Dwi Anggoro, Luqman Buchori, **Setia Budi Sasongko**, Herawati Oktavianty)
Status Pengusul	:	penulis ke-3
Identitas Jurnal Ilmiah	:	a. Nama Jurnal : Bulletin of Chemical Reaction Engineering & Catalysis
		b. Nomor ISSN : 1978-2993
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		e. DOI artikel (jika ada) : https://doi.org/10.9767/bcrec.14.3.4248.678-682
		f. Alamat web jurnal : https://ejournal2.undip.ac.id/index.php/bcrec/article/view/4248
		Alamat Artikel : https://ejournal2.undip.ac.id/index.php/bcrec/article/view/4248/2671
		g. Terindex : Scopus, Q3

Kategori Publikasi Jurnal Ilmiah (beri ✓ pada kategori yang tepat) :
- [√] Jurnal Ilmiah Internasional
- [ ] Jurnal Ilmiah Nasional Terakreditasi
- [ ] Jurnal Ilmiah Nasional Tidak Terakreditasi

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Reviewer		Nilai Rata-rata
	Reviewer I	Reviewer II	
a. Kelengkapan unsur isi jurnal (10%)	4	4	4
b. Ruang lingkup dan kedalaman pembahasan (30%)	11	10.5	10.75
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	11	10.8	10.9
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	11	10.8	10.9
Total = (100%)	**37**	**36.1**	**36.55**
Nilai Pengusul = (40% x 36.55)/3 = 4.87			

Semarang, Juni 2020

Reviewer 2	Reviewer 1
Prof. Ir. Abdullah, M.S., Ph.D.	Prof. Dr. Ir. Bakti Jos, DEA
NIP. 195512311983031014	NIP. 196005011986031003
Unit Kerja : Dept. Teknik Kimia FT UNDIP	Unit Kerja : Dept. Teknik Kimia FT UNDIP

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- [√] Jurnal Ilmiah Internasional
- [ ] Jurnal Ilmiah Nasional Terakreditasi
- [ ] Jurnal Ilmiah Nasional Tidak Terakreditasi

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah: Internasional (40)	Nasional Terakreditasi	Nasional Tidak Terakreditasi	Nilai Akhir Yang Diperoleh
a. Kelengkapan unsur isi jurnal (10%)	4,00			4,00
b. Ruang lingkup dan kedalaman pembahasan (30%)	12,00			11,00
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12,00			11,00
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12,00			11,00
Total = (100%)	**40,00**			**37,00**
Nilai Pengusul = (40% x 37)/3 = 4,93				

Catatan penilaian artikel oleh Reviewer:
1. Kesesuaian dan kelengkapan unsur isi jurnal:
Unsur artikel dalam jurnal lengkap, terdiri dari Title, Abstract, Keywords, Introduction, Materials and Method, Results and Discussion, Conclusion, Acknowledgment, References, serta telah memenuhi petujuk penulisan dari jurnal.
2. Ruang lingkup dan kedalaman pembahasan:
Artikel mempelajari tentang Basicity Optimization of KF/Ca-MgO Catalyst using Impregnation Method. Topik ini sesuai dengan bidang ilmu Teknik Kimia. Pembahasan ditulis dengan lengkap dan detail, penjelasan disertai dengan gambar skematik. Kedalaman pembahasan cukup baik, ditunjukkan dengan dukungan sejumlah 19 dari 24 pustaka (79,1 %) dalam pembahasan.
3. Kecukupan dan kemutakhiran data/infrmasi dan metodologi:
Kecukupan dan kemutakhiran data baik. Artikel didukung oleh referensi yang mutakhir dimana dari 24 referensi yang digunakan, terdapat 12 (50/%) adalah terbitan 10 tahun terakhir. Metodologi dituliskan cukup lengkap disertai dengan analisa statistik model kinetika.
4. Kelengkapan unsur dan kualitas terbitan/jurnal:
Kategori jurnal baik, termasuk dalam jurnal internasional terindeks Scopus dan Scimago dengan nilai SJR = 0.211, H index = 12 (Tahun 2018). Jurnal telah memiliki petunjuk penulisan yang jelas. Pengecekan similaritas dengan Turnitin menunjukkan similarity index sebesar 15 %.

Semarang, Juni 2020
Reviewer I

Prof. Dr. Ir. Bakti Jos, DEA
NIP. 196005011986031003
Unit Kerja : Dept. Teknik Kimia FT UNDIP

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Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah			Nilai Akhir Yang Diperoleh
	Internasional [40]	Nasional Terakreditasi [ ]	Nasional Tidak Terakreditasi [ ]	
a. Kelengkapan unsur isi jurnal (10%)	4,00			4,00
b. Ruang lingkup dan kedalaman pembahasan (30%)	12,00			10,50
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12,00			10,80
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12,00			10,80
Total = (100%)	**40,00**			36,10
Nilai Pengusul = (40% x 36,10)/3 = 4,81				

Catatan Penilaian artikel oleh Reviewer :

1. **Kesesuaian dan kelengkapan unsur isi jurnal:** Artikel ditulis lengkap, dengan rincian title, abstract, introduction, experimental, result and discussion, conclusion, aknowledgement dan references. Artikel berisi
2. **Ruang lingkup dan kedalaman pembahasan:** Materi sesuai dengan bidang pengusul yaitu teknik kimia. Artikel berisi tentang studi optimasi katalis KF/Ca-MgO menggunakan response surface methodology. Kedalaman pembahasan cukup.
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:** Data acuan yang digunakan cukup ada 24 sitasi dan 11 sitasi yang digunakan adalah baru (10 tahun terakhir)
4. **Kelengkapan unsur dan kualitas terbitan:** jurnal terindex Scopus dengan kualitas penerbit baik dengan katagori Q3

Semarang, Juni 2020
Reviewer 2

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Research Article

Basicity Optimization of KF/Ca-MgO Catalyst using Impregnation Method

Didi Dwi Anggoro*, **Luqman Buchori**, **Setia Budi Sasongko**, **Herawati Oktavianty**

Department of Chemical Engineering, Diponegoro University, Jl. Prof. Soedharto, Kampus Undip Tembalang, Semarang 50239, Indonesia

Received: 25th January 2019; Revised: 11th May 2019; Accepted: 20th May 2019; Available online: 30th September 2019; Published regularly: December 2019

Abstract

This research aimed at determining the optimum value between calcination temperature (X_1), calcination time (X_2) and %wt KF (X_3) toward optimum basicity of KF/Ca-MgO catalyst. Approximately 2-4%wt KF was added to the KF/Ca-MgO catalyst using the impregnation method to assist the Ca-MgO, at 450-550 °C and a calcination time of 2-4 hours. Furthermore, its basicity was analyzed using Tanabe's titration method. The use of Variance Analysis (ANOVA), indicated that calcination temperature (X_1) factor achieved the highest basicity of KF/Ca-MgO catalyst, as indicated by its high F-value (16.46262) and low p-value (0.0067). The correlation between each operating variables and the responses were shown in a mathematical equation. The optimization value is estimated by limiting the calcination temperature from 415.9 to 584.1 °C, with a calcination time ranging from 1.32 to 4.68 hours, and %wt KF of 1.3182 to 4.6818 % that obtained 1.18 mmol/g for the optimal catalyst basicity.

Keywords: KF/Ca-MgO catalyst; Basicity; Optimization; Response Surface Methodology

How to Cite: Anggoro, D.D., Buchori, L., Sasongko, S.B., Oktavianty, H. (2019). Basicity Optimization of KF/Ca-MgO Catalyst using Impregnation Method. *Bulletin of Chemical Reaction Engineering & Catalysis*, 14(3): 678-682 (doi:10.9767/bcrec.14.3.4248.678-682)

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1. Introduction

Potassium Fluoride (KF) is an alkaline halide molecule with an active and reactive F (fluorine) element, making it easier to rebound with metals. An increase in its effects leads to a higher catalyst activity [1-5]. However, when it is added in surplus, it decreases the catalyst activity. This has been proven by Wen *et al.* [6] during research by adding KF in CaO, where its addition above 25%, decreased the catalyst activity. When the amount is large, it covers the surface of the catalyst, thereby reducing its activity. Hu *et al.* [7] also conducted a study of the addition of KF in several catalysts, such as CaO-Fe_3O_4, SrO-Fe_3O_4, and MgO-Fe_3O_4 in which each had the optimum condition with the addition of KF. This was shown from the acquisition of biodiesel. According to Hu *et al.* [7], the obtained biodiesel was high assuming the addition of KF reaches 25% for CaO, 35% for MgO, and 10% for SrO.

The dispersion of active metals to the surface of the solid material is capable of expanding the catalyst surface and increasing the number of

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Bulletin of Chemical Reaction Engineering & Catalysis, 14 (3) 2019, 478-489

Research Article

Pd-Fe_3O_4/RGO: a Highly Active and Magnetically Recyclable Catalyst for Suzuki Cross Coupling Reaction using a Microfluidic Flow Reactor

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[1]Chemical Engineering Department, The British University in Egypt, BUE, Cairo, Egypt
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Abstract

There are several crucial issues that need to be addressed in the field of applied catalysis. These issues are not only related to harmful environmental impact but also include process safety concerns, mass and heat transfer limitations, selectivity, high pressure, optimizing reaction conditions, scale-up issues, reproducibility, process reliability, and catalyst deactivation and recovery. Many of these issues could be solved by adopting the concept of micro-reaction technology and flow chemistry in the applied catalysis field. A microwave assisted reduction technique has been used to prepare well dispersed, highly active Pd/Fe_3O_4 nanoparticles supported on reduced graphene oxide nanosheets (Pd-Fe_3O_4/RGO), which act as a unique catalyst for Suzuki cross coupling reactions due to the uniform dispersion of palladium nanoparticles throughout the surface of the magnetite - RGO support. The Pd-Fe_3O_4/RGO nanoparticles have been shown to exhibit extremely high catalytic activity for Suzuki cross coupling reactions under both batch and continuous reaction conditions. This paper reported a reliable method for Suzuki cross-coupling reaction of 4-bromobenzaldehyde using magnetically recyclable Pd/Fe_3O_4 nanoparticles supported on RGO nanosheets in a microfluidic-based high throughput flow reactor. Organic synthesis can be performed under high pressure and temperature by using a stainless steel micro tubular flow reactor under continuous flow reaction conditions. Optimizing the reaction conditions was performed via changing several parameters including temperature, pressure, and flow rate. Generally, a scalable flow technique by optimizing the reaction parameters under high-temperature and continuous reaction conditions could be successfully developed.

Keywords: Suzuki cross-coupling; 4-bromobenzaldehyde; Pd-Fe_3O_4/RGO; Flow reactor

How to Cite: Elazab, H.A., Siamaki, A.R., Gupton, B.F., El-Shall, M.S. (2019). Pd-Fe_3O_4/RGO: a Highly Active and Magnetically Recyclable Catalyst for Suzuki Cross Coupling Reaction using a Microfluidic Flow Reactor. *Bulletin of Chemical Reaction Engineering & Catalysis*, 14(3): 478-489 (doi:10.9767/bcrec.14.3.3518.478-489)

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1. Introduction

Over the past few decades, micro-reaction technology has been emerged as an ideal route to solve several critical issues in many aspects including organic chemistry and applied catalysis [1-8]. This new technology has created new promising horizons for chemical synthesis and industry via performing chemistry under continuous flow reaction conditions instead of the conventional batch chemistry [9-16]. This

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Available online at BCREC website: https://bcrec.id

Bulletin of Chemical Reaction Engineering & Catalysis, 14 (3) 2019, 490-501

Research Article

Polyvinylpyrrolidone - Reduced Graphene Oxide - Pd Nanoparticles as An Efficient Nanocomposite for Catalysis Applications in Cross-Coupling Reactions

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Received: 23rd October 2018; Revised: 14th March 2019; Accepted: 20th March 2019;
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Abstract

This paper reported a scientific approach adopting microwave-assisted synthesis as a synthetic route for preparing highly active palladium nanoparticles stabilized by polyvinylpyrrolidone (Pd/PVP) and supported on reduced Graphene oxide (rGO) as a highly active catalyst used for Suzuki, Heck, and Sonogashira cross coupling reactions with remarkable turnover number (6500) and turnover frequency of 78000 h^{-1}. Pd/PVP nanoparticles supported on reduced Graphene oxide nanosheets (Pd-PVP/rGO) showed an outstanding performance through high catalytic activity towards cross coupling reactions. A simple, reproducible, and reliable method was used to prepare this efficient catalyst using microwave irradiation synthetic conditions. The synthesis approach requires simultaneous reduction of palladium and in the presence of Gaphene oxide (GO) nanosheets using ethylene glycol as a solvent and also as a strong reducing agent. The highly active and recyclable catalyst has so many advantages including the use of mild reaction conditions, short reaction times in an environmentally benign solvent system. Moreover, the prepared catalyst could be recycled for up to five times with nearly the same high catalytic activity. Furthermore, the high catalytic activity and recyclability of the prepared catalyst are due to the strong catalyst-support interaction. The defect sites in the reduced Graphene oxide (rGO) act as nucleation centers that enable anchoring of both Pd/PVP nanoparticles and hence, minimize the possibility of agglomeration which leads to a severe decrease in the catalytic activity.

Keywords: Graphene; Cross-Coupling; Microwave–assisted synthesis; Heterogeneous catalysis; Catalyst recycling

How to Cite: Elazab, H.A., El-Idreesy, T.T. (2019). Polyvinylpyrrolidone - Reduced Graphene Oxide - Pd Nanoparticles as an Efficient Nanocomposite for Catalysis Applications in Cross-Coupling Reactions. *Bulletin of Chemical Reaction Engineering & Catalysis*, 14(3): 490-501 (doi:10.9767/bcrec.14.3.3461.490-501)

Permalink/DOI: https://doi.org/10.9767/bcrec.14.3.3461.490-501

1. Introduction

Over the past few decades, Nanoscience has emerged as a new promising interdisciplinary scientific field [1-4]. Nanoclusters have been investigated for many catalytic applications due to their large surface-to-volume ratio. Recently, one of the main interests that attracted researchers' attention is transition metals based materials, especially when using palladium nanoparticles [5-10]. It is well established that palladium-based catalysts have been widely used in homogeneous and heterogeneous catalysis due to their several outstanding properties that combine between those of single metal atoms and other bulk metals [11-16]. In order to design new compounds with tailored chemical and

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