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

Judul Karya Ilmiah (Prosiding) : Influences of Ammonia for Synthesis of 8-Hydroxiquinoline Copper(II)
Nama/ Jumlah Penulis : Suhartana, Laelatri Agustina, Sriatun (3)
Status Pengusul : Penulis pendamping
Identitas Prosiding :
  a. Judul Prosiding : Green Chemistry: Proceeding of 9th Joint Conference on Chemistry, 12-13 November 2014
  b. ISBN/ISSN : 978-602-285-049-6
  c. Thn Terbit, Tempat Pelaks. : 2015, Semarang
  d. Penerbit/Organiser : UNNES Press
  e. Alamat Repository/Web : https://jcc.undip.ac.id/24/the-proceeding-of-9th-jcc-semarang-2014.conf#post_detail
     Alamat Artikel : https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part7.pdf
     Url Turnitin: (17%)
     https://doc-pak.undip.ac.id/2874/29/Turnitin%20C29.pdf
  f. Terindeks di (jika ada) : -

Kategori Publikasi Makalah
(beri ✓pada kategori yang tepat) :
☑ *Prosiding* Forum Ilmiah Internasional
☐ *Prosiding* Forum Ilmiah Nasional

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	**Nilai Maksimal Prosiding**		**Nilai Akhir Yang Diperoleh**
	Internasional ☑	**Nasional** ☐	
a. Kelengkapan unsur isi prosiding (10%)	1,5		1,5
b. Ruang lingkup dan kedalaman pembahasan (30%)	4,5		4,3
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	4,5		4,3
d. Kelengkapan unsur dan kualitas terbitan /prosiding (30%)	4,5		4,4
Total = (100%)	**15,00**		**14,5**
Penulis Pendamping: (0,4x14,5)/2 = 2,9			

Catatan Penilaian Paper oleh Reviewer :

1. **Kesesuaian dan kelengkapan unsur isi prosiding:**
   Unsur isi prosiding sesuai dan lengkap. Nilai 1,5
2. **Ruang lingkup dan kedalaman pembahasan:**
   Ruang lingkup tentang pengaruh ammonia pada pembentukan kompleks tetramin tembaga (II), yang mana kompleks ini dgunakan untuk mensintesis 8-hidroksi kuinolin tembaga (II). Pembahasan cukup namun kurang didukung oleh Pustaka yang relevan. Nilai 4,3
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
   Data dan informasi pada penelitian tersebut cukup, namun pustakanya kurang mutakhir, sedangkan metodolginya cukup memadai. Nilai 4,3
4. **Kelengkapan unsur dan kualitas terbitan/ prosiding:**
   Unsur prosiding lengkap, kualitas prosiding baik. Nilai 4,4

Semarang,
Reviewer 1

Dr. Bambang Cahyono, MS
NIP. 196303161988101001
Unit Kerja : Departemen Kimia FSM UNDIP

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

Judul Karya Ilmiah (Prosiding) : Influences of Ammonia for Synthesis of 8-Hydroxiquinoline Copper(II)
Nama/ Jumlah Penulis : Suhartana, Laelatri Agustina, Sriatun
Status Pengusul : Penulis pendamping
Identitas Prosiding : a. Judul Prosiding : Green Chemistry: Proceeding of 9th Joint Conference on Chemistry, 12-13 November 2014
b. ISBN/ISSN : 978-602-285-049-6
c. Thn Terbit, Tempat Pelaks. : 2015, Semarang
d. Penerbit/Organiser : UNNES Press
e. Alamat Repository/Web : https://jcc.undip.ac.id/24/the-proceeding-of-9th-jcc-semarang-2014.conf#post_detail
Alamat Artikel : https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part7.pdf
Url Turnitin: (17%)
https://doc-pak.undip.ac.id/2874/29/Turnitin%20C29.pdf
f. Terindeks di (jika ada) : -

Kategori Publikasi Makalah (beri ✓pada kategori yang tepat) :
☑ *Prosiding* Forum Ilmiah Internasional
☐ *Prosiding* Forum Ilmiah Nasional

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	**Nilai Maksimal Prosiding**		**Nilai Akhir Yang Diperoleh**
	Internasional ☑	**Nasional** ☐	
e. Kelengkapan unsur isi prosiding (10%)	1,5		1,2
f. Ruang lingkup dan kedalaman pembahasan (30%)	4,5		4,0
g. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	4,5		4,3
h. Kelengkapan unsur dan kualitas terbitan /prosiding (30%)	4,5		4,5
Total = (100%)	**15,00**		**14,0**
Penulis Pendamping: (0,4x14)/2 = 2,8			

Catatan Penilaian Paper oleh Reviewer :

1. **Kesesuaian dan kelengkapan unsur isi prosiding:**
   Unsur isi prosiding lengkap dan sesuai dengan turnitin similarity 18%. Nilai 1,2

2. **Ruang lingkup dan kedalaman pembahasan:**
   Ruang lingkup penelitian adalah sintesis tembaga 8-hidroksi kuinolin dan pengaruh ammonia pada riset tersebut. Kedalaman pembahasan kurang didukung oleh referensi terkait. Nilai 4,0

3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
   Data yang disajikan cukup dan kemutakhiran kurang karena tidak didukung literatur terkini (kurang dari 10 tahun). Metodologi disajikan dengan runtut dan bisa diulang oleh peneliti lain. Nilai 4,3

4. **Kelengkapan unsur dan kualitas terbitan/ prosiding:**
   Kelengkapan unsur memadai dan kualitas terbitan cukup baik. Nilai 4,5

Semarang,
Reviewer 2

Drs. Gunawan, M.Si, Ph.D
NIP.196408251991031001
Unit Kerja : Departemen Kimia FSM UNDIP

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

Judul Karya Ilmiah (Prosiding) : Influences of Ammonia for Synthesis of 8-Hydroxiquinoline Copper(II)
Nama/ Jumlah Penulis : Suhartana, Laelatri Agustina, Sriatun (3)
Status Pengusul : Penulis pendamping
Identitas Prosiding :
a. Judul Prosiding : Green Chemistry: Proceeding of 9th Joint Conference on Chemistry, 12-13 November 2014
b. ISBN/ISSN : 978-602-285-049-6
c. Thn Terbit, Tempat Pelaks. : 2015, Semarang
d. Penerbit/Organiser : UNNES Press
e. Alamat Repository/Web : https://jcc.undip.ac.id/24/the-proceeding-of-9th-jcc-semarang-2014.conf#post_detail
Alamat Artikel : https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part7.pdf
Url Turnitin: (17%)
https://doc-pak.undip.ac.id/2874/29/Turnitin%20C29.pdf
f. Terindeks di (jika ada) : -

Kategori Publikasi Makalah : ☑ *Prosiding* Forum Ilmiah Internasional
(beri ✓pada kategori yang tepat) ☐ *Prosiding* Forum Ilmiah Nasional

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	**Nilai Reviewer**		**Nilai Rata-rata**
	Reviewer I	**Reviewer II**	
a. Kelengkapan unsur isi prosiding (10%)	1,5	1,2	1,35
b. Ruang lingkup dan kedalaman pembahasan (30%)	4,3	4,0	4,15
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	4,3	4,3	4,3
d. Kelengkapan unsur dan kualitas terbitan/prosiding(30%)	4,4	4,5	4,45
Total = (100%)	**14,5**	**14,0**	**14,25**
Penulis Pendamping: (0,4x14,25)/2 = 2,85			

Semarang,

Reviewer 2

Drs. Gunawan, M.Si, Ph.D
NIP. 196408251991031001
Unit Kerja : Departemen Kimia FSM UNDIP

Reviewer 1

Dr. Bambang Cahyono, MS
NIP. 196303161988101001
Unit Kerja : Departemen Kimia FSM UNDIP

CERTIFICATE OF PRESENTATION

9th JCC
Semarang Indonesia

The conference on *Green Chemistry*

Certificate no.: 240/UN7.3.8/2014

This is to certify that

Suhartana

has presented a paper entitled

Influences of Ammonia for Synthesis of 8-Hydroxiquinoline Copper(II)

at the 9th Joint Conference on Chemistry held on 12-13 November 2014 in Semarang that organised by Chemistry Department, Diponegoro University

Semarang, 13 November 2014

Dean of Faculty of Science and Mathematics
Diponegoro University

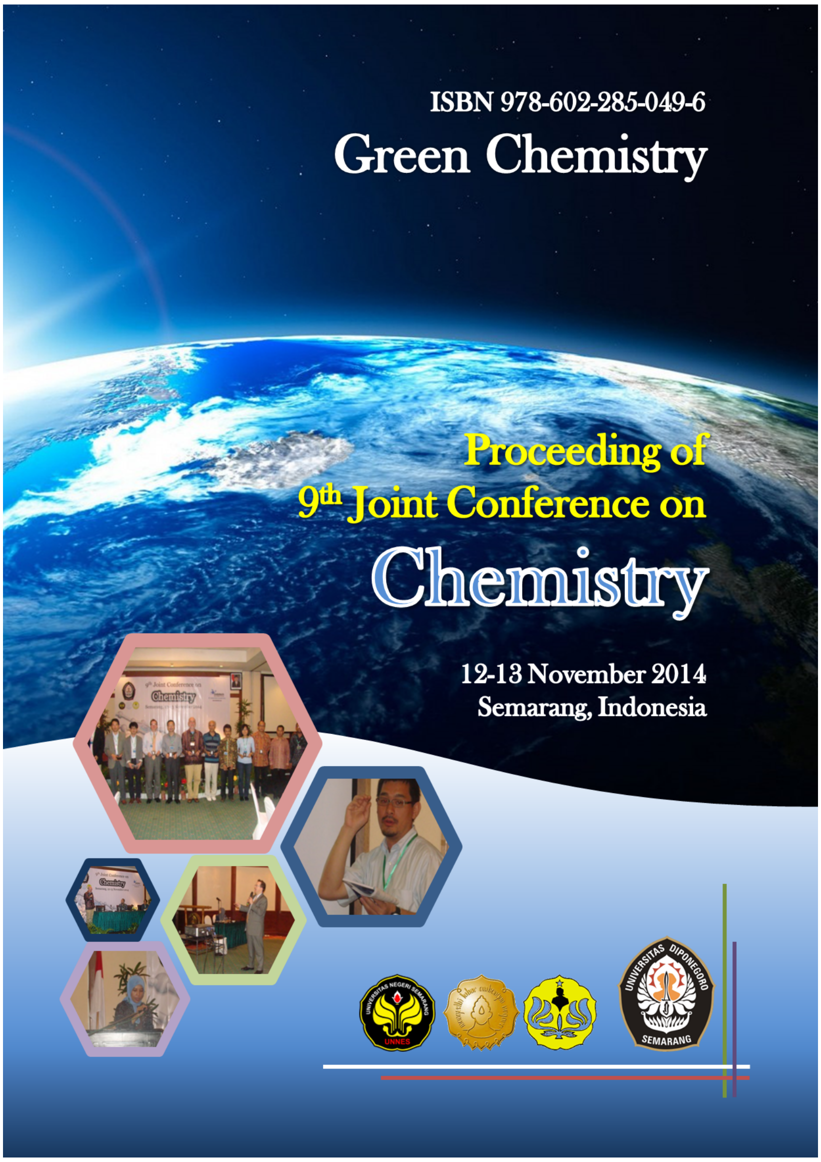
Dr. Muhammad Nur, DEA
NIP 19571126 199001 1 001

9th Joint Conference on
Chemistry Chair

Dr. Agustina L.N. Aminin, M.Si
NIP 19700801 199803 2 001

UNIVERSITAS DIPONEGORO
SEMARANG

In collaboration with



ISBN 978-602-285-049-6

Green Chemistry

Proceeding of 9th Joint Conference on Chemistry

12-13 November 2014
Semarang, Indonesia

The Proceeding of 9th JCC - Semarang - 2014 (https://jcc.undip.ac.id/24/the-proceeding-of-9th-jcc-semarang-2014.conf#post_detail)

Front Cover page (https://jcc.undip.ac.id/assets/attachments/JCC9%20front%20page/Picture1a.png)

Title Page
(https://jcc.undip.ac.id/assets/attachments/JCC9%20front%20page/table%20of%20content%20rev_Part1.pdf)

Copyright page
(https://jcc.undip.ac.id/assets/attachments/JCC9%20front%20page/table%20of%20content%20rev_Part2.pdf)

Preface
(https://jcc.undip.ac.id/assets/attachments/JCC9%20front%20page/table%20of%20content%20rev_Part3.pdf)

Board of Reviewers
(https://jcc.undip.ac.id/assets/attachments/JCC9%20front%20page/table%20of%20content%20rev_Part4.pdf)

Table of Contents
(https://jcc.undip.ac.id/assets/attachments/JCC9%20front%20page/table%20of%20content%20rev_Part5.pdf)

Section 1: Material Chemistry (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part1.pdf)

TiO_2-SiO_2 Modified on Acrylic Paint with Self-Cleaning Characteristic
(https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part2.pdf)
Agus Ridwan, Sri Wahyuni

Synthesis and Characterization of Cellulose Based Superabsorbent Polymer Composites
(https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part3.pdf)
Ahmad Zainal Abidin, N. M. T. P. Sastra, G. Susanto, H.P.R. Graha Artikel luar negeri 1

Synthesis and Characterization of Nano Scale Zero-Valent Iron Supported on Mesoporous Silica (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part4.pdf)
Atyaf Khalid Hammed, Nugroho Dewayanto, D. Dongyun, Mohd Ridzuan Nordin

Synthesis of 2, 7-Disulfonatonaphthalene-5-Hydroxy-4-Amino-N-Propyl Silica Hybrid by Sol-Gel and Grafting Processes (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part5.pdf)
Choiril Azmiyawati, Nuryono, Narsito

Modification of Ni/Zn-HZSM-5 Double Promoted Catalyst for Biofuel Production from *Cerbera Manghas* Oil (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part6.pdf)
Danawati Hari Prajitno, Agus Budianto, Muhammad Iqbal, Achmad Roesyadi, Victor Purnomo

Influences of Ammonia for Synthesis of 8-hydroxiquinoline Copper(II) (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part7.pdf)
Suhartana, Laelatri Agustina, Sriatun

Influence of Variation Temperature on Phase Composition of Ca-Mg-Al Hydrotalcite (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part8.pdf)
Eddy Heraldy, Khoirina Dwi Nugrahaningtyas, Fendry Bangkit Sanjaya, Desi Suci Handayani, Yuniawan Hidayat

Synthesis and Characterization of Chitosan – Rice Husk Ash Silica Composite as Polymer Electrolyte Membrane (PEM) (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part9.pdf)
Eva Mardiningsih, Ella Kusumastuti

Synthesis and Characterization of the Zn(II) Complex with Dimethyl Hydroxyl Pyridine-2,6-Dicarboxylate (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part10.pdf)
Fahimah Martak

Synthesis and Characterization of $La_{1-y}Sr_yCo_{0.8}Fe_{0.2}O_3$ and $La_{1-y}Ba_yCo_{0.8}Fe_{0.2}O_3$ $(0.0 \leq y \leq 0.4)$ Dense Membranes (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part11.pdf)
Hamzah Fansuri, N. Widiastuti, A. Aliyatulmuna, W. P. Utomo, D. Prasetyoko, B. Prijamboedi

Synthesis, Characterization and Catalytic Activity of CuO/ZnO on Phenol Oxidation (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part12.pdf)
Nuni Widiarti, Sri Wahyuni, S Barokah

Characterization of Enzyme Electrode from Nanochitosan Immobilized Glucose Oxidase on Carbon Paste Modified with Nanofiber Polyaniline for Biosensor Application (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part13.pdf)
Popi Asri Kurniatin, Laksmi Ambarsari, Inda Setyawati, Puspa Julistia Puspita, Aneisti

Andisol Soil Utilization of Mount Lawu as Natural Adsorbent Multi Soil Layering Materials for Domestic Waste (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part14.pdf)
Pranoto, R. Sudaryanto, Supriyadi

Modifying Surface Charge of Chitosan Membrane by Carboxymethylchitosan Blended with Poly(vinylalcohol) (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part15.pdf)
Retno Ariadi Lusiana, Dwi Siswanta, Mudasir, T. Hayashita

Effect of N-doped Graphene for Pt/N-doped Graphene Catalyst (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part16.pdf)
Rikson Siburian, Minsyahril Bukit

The utility of Aqueous Extract of Air-dried *Callophyllum inophyllum L.* Leaf as Medium/Reduction System for Synthesis of Gold Nanoparticles (AuNPs) (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part17.pdf)
Salprima Yudha S., Zulfikri Achid Mardlia, Eka Angasa, Totok Eka Suharto, Yuta Nishina

The Impregnated Boron Oxide Catalysts for the Reaction of Dehydrogenation of Ethane (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part18.pdf)
Setiadi

Preparation of Zn-Ni/TiO_2 Photocatalyst by Sol-gel Method and Its Activity in Water Decomposition (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part19.pdf)
Sigit Priatmoko, E. Cahyono, S. Wahyuni, Ella Kusumastuti, Satrio Bekti Uji Prambasto

Synthesis of Humic Acid Coated Fe_3O_4 Magnetic Nanoparticle and Its Application to Adsorp Cu(II) (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part20.pdf)
Soerja Koesnarpadi, Daniel

Modification of Synthetic Zeolite from Bagasse Ash and Their Characterization (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part21.pdf)
Sriatun, Taslimah, Linda Suyati

Synthesis and Surface Modification of TiO_2/Carbon Photocatalyst Produced by Arc Discharge in Ethanol Medium (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part22.pdf)
Teguh Endah Saraswati, Isya Fitri Andhika, Astrid Olivia Nandika, Sayekti Wahyuningsih, Candra Purnawana

The Effect of Vulcanization Time on Mechanical and Chemical Properties of Liquid Rubber Compound (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part23.pdf)
Teja Dwi Sutanto, Bambang Setiaji, Karna Wijaya, Totok Eka Suharto

Calcium Phosphate-Chitosan Composite as a Bone Cement Candidate (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part24.pdf)
Tri Windarti and Benjamin Horrocks

Artikel luar negeri 2

Optimization Process of H-Zeolite Catalyst Preparation with Surface Response Methods (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part25.pdf)
Widayat, H. Susanto, H. Satriadi

Preparation of Activated Carbon from Oil Palm Shell by Activating $ZnCl_2$ as Carbon Monoxide Adsorbent (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part26.pdf)
Yuliusman, Widodo W. Purwanto, Yulianto S. Nugroho, Randy Anggriany

Section 2: Physical Chemistry

Effects of Voltage and Number of Cell on Desalination of Brackish Water using Electrodialysis Method (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part27.pdf)
Alfan Purnomo, Zakiatul Mirfada, Arseto Yekti Bagastyo

Mesostructured Titanosilicates Catalyst for Synthesis of Vitamin K3 (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part28.pdf)
Alfa AkustiaWidati, Hamami, Handoko Darmokoesomo, Nada Adhisty Stevany

XRD of Synthetic Zeolite for Surfactant Builder: NaOH Concentration Variation in Sodium Silicate Decision of Rice Husk Ash (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part29.pdf)
Arnelli, Ahmad Suseno, Teguh Imam Prasetyo

Catalytic Conversion of 1-Octadecene to Shorten Chains Alkane (C_6 – C_{12}) (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part30.pdf)
D. Setyawan Purwo H, Triyono, Narsito, Tutik Dwi Wahyuni

Electrochemical Characterization of Direct Ethanol Fuel Cell (DEFC) with Crude Bioethanol Feed (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part31.pdf)
Dwi Kemala Putri, Mitra Eviani, Aditya Yudistira, Isdiriayani M. Nurdin, Hary Devianto, Ardiyan Harimawan

Conversion of Glycerol into Polyhydroxybutyrate(PHB) using*Escherichia coli* (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part32.pdf)
Endah Fitriani Rahayu, Wega Trisunaryanti, Karna Wijaya

The Effects of Hydrolysis Temperature and Catalyst Concentration on Bio-ethanol Production from Banana Weevil (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part33.pdf)
Eni Budiyati and Umar Bandi

The Effect of Coconut Oil Concentration on Physical and Chemical Properties of Cosmetic Emulsions (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part34.pdf)
Eni Widiyati, AH. Bambang Setiaji, Totok Eka Suharto, Triyono

Adsorption of Pb(II) and Co(II) on Adsorbent Clay Immobilized *Saccharomyces cerevisiae* Biomass (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part35.pdf)
Fahmiati, Mashuni, L.D. Syahdam Hamidi, Nasra

Utilization of Cassava Peel as Electric Energy Source through Microbial Fuel Cell (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part36.pdf)
Linda Suyati, Didik Setiyo Widodo, Abdul Haris, Wuryanti, Rahmad Nuryanto

Effect of Activated Bagasse Charcoal Size as Biomaterial Pretreatment on Waste Cooking Oil Biodiesel Characteristics (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part37.pdf)
Lizda Johar Mawarani, Tatik Farihah

Electrochemical Characterization of Direct Ethanol Fuel Cell (DEFC) with Bioethanol Feed Containing Acetic Acid as Impurity (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part38.pdf)
Mitra Eviani, Isdiriayani M. Nurdin, Hary Devianto

The in Silico Molecular Interaction of Organoboron Compounds as Curative Measure toward Cervical Cancer (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part39.pdf)
Ridla Bakri, Arli Aditya Parikesit, Cipta Priyo Satrianto, Djati Kerami, Usman Sumo Friend Tambunan

Catalytic Properties of Bimetallic NiNP-M/AlOH (M = Sn, In, Ga, Ag, Nb, and Zr) on Selective Hydrogenation of Furfural (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part40.pdf)
Rodiansono, M. D. Astuti, A. Ghofur, Shogo Shimazu

Artikel luar negeri 3

Adsorption Study of 2-mercaptobenzothiazole at Copper Surface as Corrosion Inhibitor in HCl (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part41.pdf)
Taumy Alif Firman, Yoki Yulizar

Emulsification Ability of Surfactant-Like Peptides Predicted by Coarse Grained Molecular Dynamics Simulations (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part42.pdf)
Tegar Nurwahyu Wijaya, Rukman Hertadi

Biofuel from Light Tar Resulted from Coconut Shell Pyrolysis by Distillation Process (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part43.pdf)
Uswatun Hasanah, Bambang Setiaji, Triyono, Chairil Anwar

Adsorption of Cyanide Ion from Aqueous Solutions by *Saccharomyces cerevisiae* Biomass (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part44.pdf)
Venty Suryanti, Fitria Rahmawati, Yudha Anggara Haeqal

Biosorption of Cu^{2+}, Zn^{2+}, and Cd^{2+} by *Nannochloropsis salina* in a Three-Metal System (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part45.pdf)
Yusafir Hala, Emma Suryati, Paulina Taba, Nesty MudiTumale

The Effect of Annealing Temperature to The X-Ray Diffraction Patterns of The Thin Film of Cardanol Compound from Alor Regency NTT Province (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part46.pdf)

Zakarias Seba Ngara, I Gusti M. Budiana, Aliwarsito

Section 3: Analytical Chemistry

Effect of pH on Cu-S TiO_2 Photocatalytic Performance toward Phenol Photodegradation and Cr(VI) Photoreduction by Visible Light Irradiation (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part47.pdf)
Abdul Haris, Didik Setiyo Widodo, Rahmad Nuryanto

Electrochemical Impedance Spectroscopy Analysis of Lithium Polymer Batteries during Charge/Discharge Cycle (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part48.pdf)
Achmad Rochliadi, Multazam, I Made Arcana, Bunbun Bundjali

Influence of C/N Ratio in Activated Sludge to Remove Cr(VI) (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part49.pdf)
Arseto Yekti Bagastyo, Natalia Diani Triana

Method Development and Validation for Lead (Pb) Analysis in Natural Honey from East Kalimantan (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part50.pdf)
Bohari Yusuf, Finqo Aprianto

Electroremediation of Polluted Water: Electrodecolorization of Batik Wastewater (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part51.pdf)
Didik Setiyo Widodo, Abdul Haris, Gunawan

Influence on The Degree of Increase in Natrium Metabisulphite White Bread Flour (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part52.pdf)
Heny Kusumayanti, Laila Faizah, R.TD. Wisnu Broto, Hanifah, M. Taqiyuddin

Selective Adsorption of Phenol and Vanillin Using Eugenol Based Molecularly Imprinted Polymer (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part53.pdf)
M. Cholid Djunaidi, Dwi Siswanta, Jumina

The Influence of Ascorbic Acid, Creatinine and Urea on the Analysis of Uric Acid in the Blood Serum by Stripping Voltammetry using Graphite Electrode (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part54.pdf)
Miratul Khasanah, Handoko Darmokusumo, Ganden Supriyanto, Ahmad Zaky Pulungan, Putut Satrio Dahono

Optimization and Validation of HPLC for Analysis of Rhodamine B in Sponge Cake (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part55.pdf)
Novi Yantih, Zuhelmi Aziz, Aditya Dicky Prasetya

Analysis of 8 Human Pharmaceuticals in Water Samples Using Solid Phase Extraction Followed by Liquid Chromatography Tandem Mass Spectrometry (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part56.pdf) Artikel luar negeri 4

Samuel Budi Wardhana Kusuma, Ibrahim Al Tarawneh, Robert Kreuzig

Analysis of Nitrosodiethylamine (NDEA) in Salted Fish with Hollow Fibre-Liquid Phase Microextraction Gas Chromatography Flame Ionization Detector(HF-LPME-GC-FID) Method (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part57.pdf)
Usreg Sri Handajani, Ganden Supriyanto, Yanuardi Raharjo, Gunawan Dwi Saputra

Application of Cone Shaped Membrane-Liquid Phase Microextraction for Analysis Nitrosodipropylamine in Salted Fish (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part58.pdf)
Yanuardi Raharjo, Usreg Sri Handajani, Eko Aryo Wijaksono

Section 4: Organic Chemistry

Phytochemical Screening and Toxicity Test BSLT for Ethanol Extract of Agarwood*(Aquilaria microcapa Baill)* (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part59.pdf)
Ahmad Musir, Risma M. Tambunan, BambangTriseno

Determination of Glabridin in Licorice Root (*Glycyrrhiza glabra L.*) Using High Performance Liquid Chromatography (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part60.pdf)
Faridah, Siti Umrah Noor, Rahmawati T.

Antidiabetic and Antihypercholesterolemic Activities of Citrus Sinensis Peel in Rats (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part61.pdf)
Haryoto, Muhtadi, Tanti Azizah, Andi Suhendi

Acute Toxicity for Combination Extract of *Terminalia muelleri Benth.* and *Curcuma xanthorrhiza* (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part62.pdf)
Khairul Anam, Dewi Kusrini, Ratna Megawati Widharna

The Effect of Oil Types on The Characteristics of Solid Soap (https://jcc.undip.ac.id/assets/attachments/JCC9%20-%20content/Proceeding%20content%20rev_Part63.pdf)
Mardiyah Kurniasih, Purwati, Anung Riapanitra, Zusfahair, Tri Wahyuni

Proceedings of
The 9th Joint Conference on Chemistry
ISBN 978-602-285-049-6

Synthesis and Characterization of Nano Scale Zero-Valent Iron Supported on Mesoporous Silica

Atyaf Khalid Hammed[a], Nugroho Dewayanto[a], D. Dongyun[b], Mohd Ridzuan Nordin[a]

Abstract

Nano scale zero-valent iron (NZVI) supported on mesoporous silica (MSN) was synthesized through liquid phase reduction route. in this method, $FeCl_3.6H_2O$ solution was titrated with $NaBH_4$ as reduction agent. Various colours of products from black to light brown were formed from this process due to the different intensity of oxidation process. Mesoporous silica nanoparticles (MSNs) were prepared through the activation of fumed silica with concentrated hydrochloric acid (HCl). The mixture was refluxed at 90 °C with continuous stirring for 4 hours. This treatment increases the BET surface area from 61.0957 m^2/g to 125.8745 m^2/g. Preparation of NVZI supported by MSNs was conducted in alkaline solution. Amount of $FeCl_3.6H_2O$ in aqueous solution and activated silica in certain ratio was mixed at room temperature. $NaBH_4$ solutionwas added to the mixture in drop wise manner (3 ml/min) with vigorous stirring at room temperature. NVZI/MSN were characterized by XRD, BET, FTIR and FESEM. The capacity of NZVI/MSN in adsorption of methylene blue (MB) from aqueous solution was determined in series of batch experiments. Initial experiment showed the best performance of the adsorbent was achieved at $FeCl_3.6H_2O$ to MSN weight ratio of 0.4. The equilibrium was reached after 60 min of adsorption. The optimum adsorption condition was achieved at initial concentration 15 mg/L of MB and initial pH solution 7 under room temperature. NZVI/MSN is found to be an effective adsorbent for removing MB from aqueous solution.

[a]Faculty of Industrial Science and Technology, Universiti Malaysia Pahang, Lebuhraya Tun Razak 26300 Kuantan, Pahang, Malaysia.

[b]Key Laboratory for Catalysis and Materials Science of the State Ethnic Affairs Commissions & Ministry of Education, South Central University for Nationalities, Wuhan 430074, China.

Corresponding author e-mail address: nugroho.dewayanto@gmail.com

Introduction

The widespread application of dyes in textiles, printing, and food plants has produced a large amount of dye containing wastewater. Because some dyes and their degradation products may be carcinogens and toxic, the removal of dyes from wastewater becomes an important issue in environmental protection. Moreover, the colour that is generated by the presence of dyes in surface water causes great concern to the public. This urges an intensive search for the best available technology for the removal of dyes. Some physico-chemical methods, such as advanced oxidation and biological process, coagulants, oxidizing agents, membrane, electrochemical, and adsorption techniques have been proposed to satisfy the above requirements (Idris et al., 2007,Badruddoza et al., 2010, Kadirova et al., 2013). Among these methods, it was found that adsorption might be an efficient and economic process to remove dyes and also to control the biochemical oxygen demand (Ling et al., 2012).

Numerous studies have been done on dyes adsorption kinetics, equilibrium modelling, and mechanism as well as to the factors that affect adsorption. Recently, mesoporous materials such as MCM-41 have also received a considerable recognition due to their large pore-space and special surface property (Petala et al., 2013). Porous materials have attracted the attention of scientists due to commercial interest related to their applications in separations, catalysts, and purification technologies. in the last decade, intensive scientific research efforts have been made in the areas of nano-porous materials (Zhu et al., 2009).

Nanostructures in the form of thin films, nanoparticles, nanocomposites and nanocrystalline materials are of interest for both fundamental scientific research and technological applications since some of their properties are controlled by their extremely large surface areas (Ray et al., 2010).Nanoporous and nanostructured materials are also considered ideal candidates for surface environment interactions, such as in gas-sensing, hetero generous catalysis, and separation. Furthermore, scientists are still targeting new adsorbent with good property. in recent years, with the development of nanotechnology, various

Artikel luar neger 2

Calcium Phosphate-Chitosan Compositeas a Bone Cement Candidate

Tri Windarti[a] and Benjamin Horrocks[b]

Abstract

A research about study of surface chemistry and morphology of bone cement from calcium phosphate-chitosan composite has been conducted. Surface chemistry and morphology of an artificial bone is directly influence to the osteoinductivity property. Calcium phosphate compounds as powder phase was reacted to liquid phase that contains ofNa_2HPO_4 solution and chitosan. Analysis instruments such as XRD and SEM-EDS were used to identify surface chemistry, morphology and structural transformation of cement. Setting time and hardening time were tested to know the feasibility of cement when used in minimally invasive surgery technique. The results showed that setting time of calcium phosphate cement became shorter as well hardening time became longer by the increasing of liquid/powder (L/P) ratio and chitosan concentration. SEM image of calcium phosphate showed cuboid crystal shape. The transformation of calcium phosphate into CPC and composite were not changing it structure and morphology. The change only happen on calcium phosphate surface that caused by deposition of phosphate ions. It can be concluded that calcium phosphate – chitosan composite has osteoinductive property and can be used as bone cement.

Keywords: calcium phosphate, bone cement, composite

[a] Chemistry Department, Diponegoro University, Indonesia

[b] School of Chemistry, Newcastle University UK

Corresponding author e-mail address: triwindarti@undip.ac.id

Introduction

Calcium phosphate compounds (CP) are known as material that can accelerate recovery process of a damaged bone and formation of a new bone tissue (Ogose et al, 2006). The bioactivity and biocompatibility of CP are not only related to its chemical structure but also to the surface chemistry and morphology. Surface chemistry and morphology have strong effect to the ability of protein adsorption in vivo, cell adhesion and host response to implant (Ratner and Bryant, 2004). Generally, biomaterial for artificial bone is developed to have specific function and capacity to facilitate protein adsorption. Also, that biomaterial should be able to form composite with organic matrix such as chitosan, collagen or gelatine, because human bone is a composite of hydroxyapatite-collagen type I (Dee et al, 2002).

To improve the function of the CP as a biomaterial, calcium phosphate cement (CPC) has been developed. CPC are produced by chemical reaction of a solid phase (powder phase) and a liquid phase, which when mixed, form a paste which progressively hardens into a solid. The powder phase contain of one or several calcium phosphate compounds (CP) and the liquid phase is water or a calcium or phosphate containing solution. The dissolution of CP will produce oversaturation of liquid phase, thus inducing the precipitation of crystals (Zang et al, 2014).

Beside the excellent biological behaviour, the other advantages of CPC is injectable and able to harden in vivo at body temperature. The viscous paste of CPC can be injected into damaged bone area and directly contact with the bone surface, so that CPC could be applicated in minimally invasive surgery technique. This technique could reduce surgery duration, reduce the effect that caused by the opening of muscle tissue, reduce the wound and minimize pain (Ginebra et al, 2010). It is hoped that the patient will get a rapid recovery with lower costs.

In this research, chitosan was used as organic matrix to form calcium phosphate – chitosan composite. Chitosan is a biopolymer with chemical structure poly (2-amino-2-dioksi-β-D-Glucose) and has similarity with collagen structure. Chitosan has been widely used in medical field because of it properties such as biocompatible and biodegradable(Hargono et al,2008). The addition of chitosan into CPC will affect to the surface structure and morphology of CPC that caused by interaction of powder phase-chitosan and liquid phase-chitosan.

Green Chemistry Section 1: Material Chemistry, Tri Windarti, et al. Page | 119

Proceedings of
The 9th Joint Conference on Chemistry
ISBN 978-602-285-049-6

Catalytic properties of bimetallic NiNP-M/AlOH (M = Sn, In, Ga, Ag, Nb, andZr) on selective hydrogenation of furfural

Rodiansono[a]*, M. D. Astuti[a]A. Ghofur[b], Shogo Shimazu[c]

Abstract

A series of bimetallic NiNP-M/AlOH (M = Sn, In, Ga, Ag, Nb, and Zr) catalysts have been synthesised by a simple hydrothermal of the mixture of nickel nanoparticles supported aluminium hydroxide (NiNP/AlOH) and a salt solution containing those of the above metals at 423 K for 2 h. The synthesised catalysts were characterised by using ICP-AES, TG-DTA, XRD, N_2-adsorption, and H_2-chemisorption. The catalytic properties were evaluated on the selective hydrogenation of furfural (FFald) at 453 K for 90 minute. Reactant and products were characterised by GC, GC-MS, and ^{1}H NMR. The presence of the second metal remarkably reduced the crystallite sizes of Ni metal as indicated by the broadened diffraction peak of Ni(111) species compared to the former of NiNP/AlOH. H_2-uptake of Ni-M/AlOH also was lower than that of NiNP/AlOH. NiNP-Sn/AlOH and NiNP-In/AlOH catalysts showed extremely high selective hydrogenation towards furfuryl alcohol (FFalc) with almost 99% yield. We expect that the high activity and selectivity over Ni-Sn/AlOH and Ni-In/AlOH catalysts due to the formation of Ni-Sn or Ni-In alloys. On the other hand, NiNP-M/AlOH (M= Ga, Nb, Ag, Zr, and Ga) catalysts showed lower the catalytic activity than that of NiNP/AlOH catalyst. Therefore, further investigation of role of the second metal on the catalytic properties of NiNP-M/AlOH (M = Sn and In) catalysts is under progress.

Keywords: bimetallic catalysts, Ni-Sn alloy, Ni-In alloy, selective hydrogenation, furfural

[a]Department of Chemistry, Lambung Mangkurat University, Jl. A. Yani Km 35.8 Banjarbaru, South Kalimantan Indonesia 70713
Telp/Faxs. +62-511-4773112; +62-511-4782899

[b]Department of Environmental Engineering, Lambung Mangkurat University, South Kalimantan Indonesia 70713

[c]Graduate School of Engineering, Chiba University, 1-33 Yayoi, Inage, Chiba 263-8522 Japan

Corresponding author e-mail address: rodiansono@unlam.ac.idor rodian114@gmail.com

Introduction

Selective hydrogenation of furfural (FFald) to furfuryl alcohol (FFalc) is great industrial interest since it widely use in various applications[1]. Industrially, furfuryl alcohol was produced by liquid hydrogenation of furfural at the high temperature and H_2pressure by using copper-chromite (Cu-Cr) catalysts which exhibits moderate in activity and selectivity. The main drawbacks of this catalyst system are toxicity and unrecyclable due to generated Cr_2O_3 and severe leaching of the metal into product[2-3]. Therefore, several attempts have been reported in order to replace Cu-Cr catalysts or to develop a new metallic catalyst system which have more efficient catalytic process and less severe of environmental problem.

Among developed metal catalysts, nickel-based catalyst with metal co-promotor or modified supports has been studied intensively due to its high activity for hydrogenation both of C=C and C=O. Several metal co-promotors were applied such as Cu [4, 8], Fe, Ce [5-7], and Sn [10] in order to improve its chemoselectivity towards C=Orather than to C=C. in this advantage, system based on Ni modified with Fe, Ce or heteropolyacids have been proved to be successful, reaching 98% selectivity to FFA at almost total conversion [5-8]. However, in some cases these modified nickel catalysts cannot reuse [4] and also showed moderate in activity or selectivity [10]. Recently, Merlo et al. reported that tin modified of Pt/SiO_2 catalyst showed 96% selectivity to furfuryl alcohol and required 6 h to reach a complete reaction[9]. Moreover, the employing of noble metal catalyst is less favourable in economical advantageous. Therefore, the design less expensive the active and selective catalyst system for production furfuryl alcohol is an issue of interest, which still presents great challenges.

We recently have reported the chemoselective hydrogenation of FFald and various unsaturated carbonyl compounds over Ni-Sn catalysts both bulk and supported. The chemoselectivity of Ni-Sn alloy

Green Chemistry Section 2: Physical Chemistry, Rodiansono, et al. Page | 193

Proceedings of
The 9th Joint Conference on Chemistry
ISBN 978-602-285-049-6

Synthesis and Characterization of Nano Scale Zero-Valent Iron Supported on Mesoporous Silica

Atyaf Khalid Hammed[a], Nugroho Dewayanto[a], D. Dongyun[b], Mohd Ridzuan Nordin[a]

Abstract

Nano scale zero-valent iron (NZVI) supported on mesoporous silica (MSN) was synthesized through liquid phase reduction route. in this method, $FeCl_3.6H_2O$ solution was titrated with $NaBH_4$ as reduction agent. Various colours of products from black to light brown were formed from this process due to the different intensity of oxidation process. Mesoporous silica nanoparticles (MSNs) were prepared through the activation of fumed silica with concentrated hydrochloric acid (HCl). The mixture was refluxed at 90 °C with continuous stirring for 4 hours. This treatment increases the BET surface area from 61.0957 m^2/g to 125.8745 m^2/g. Preparation of NVZI supported by MSNs was conducted in alkaline solution. Amount of $FeCl_3.6H_2O$ in aqueous solution and activated silica in certain ratio was mixed at room temperature. $NaBH_4$ solutionwas added to the mixture in drop wise manner (3 ml/min) with vigorous stirring at room temperature. NVZI/MSN were characterized by XRD, BET, FTIR and FESEM. The capacity of NZVI/MSN in adsorption of methylene blue (MB) from aqueous solution was determined in series of batch experiments. Initial experiment showed the best performance of the adsorbent was achieved at $FeCl_3.6H_2O$ to MSN weight ratio of 0.4. The equilibrium was reached after 60 min of adsorption. The optimum adsorption condition was achieved at initial concentration 15 mg/L of MB and initial pH solution 7 under room temperature. NZVI/MSN is found to be an effective adsorbent for removing MB from aqueous solution.

[a]Faculty of Industrial Science and Technology, Universiti Malaysia Pahang, Lebuhraya Tun Razak 26300 Kuantan, Pahang, Malaysia.

[b]Key Laboratory for Catalysis and Materials Science of the State Ethnic Affairs Commissions & Ministry of Education, South Central University for Nationalities, Wuhan 430074, China.

Corresponding author e-mail address: nugroho.dewayanto@gmail.com

Introduction

The widespread application of dyes in textiles, printing, and food plants has produced a large amount of dye containing wastewater. Because some dyes and their degradation products may be carcinogens and toxic, the removal of dyes from wastewater becomes an important issue in environmental protection. Moreover, the colour that is generated by the presence of dyes in surface water causes great concern to the public. This urges an intensive search for the best available technology for the removal of dyes. Some physico-chemical methods, such as advanced oxidation and biological process, coagulants, oxidizing agents, membrane, electrochemical, and adsorption techniques have been proposed to satisfy the above requirements (Idris et al., 2007,Badruddoza et al., 2010, Kadirova et al., 2013). Among these methods, it was found that adsorption might be an efficient and economic process to remove dyes and also to control the biochemical oxygen demand (Ling et al., 2012).

Numerous studies have been done on dyes adsorption kinetics, equilibrium modelling, and mechanism as well as to the factors that affect adsorption. Recently, mesoporous materials such as MCM-41 have also received a considerable recognition due to their large pore-space and special surface property (Petala et al., 2013). Porous materials have attracted the attention of scientists due to commercial interest related to their applications in separations, catalysts, and purification technologies. in the last decade, intensive scientific research efforts have been made in the areas of nano-porous materials (Zhu et al., 2009).

Nanostructures in the form of thin films, nanoparticles, nanocomposites and nanocrystalline materials are of interest for both fundamental scientific research and technological applications since some of their properties are controlled by their extremely large surface areas (Ray et al., 2010).Nanoporous and nanostructured materials are also considered ideal candidates for surface environment interactions, such as in gas-sensing, hetero generous catalysis, and separation. Furthermore, scientists are still targeting new adsorbent with good property. in recent years, with the development of nanotechnology, various

Influences of Ammonia for Synthesis of 8-Hydroxiquinoline Copper(II)

Suhartana, Laelatri Agustina, Sriatun

Abstract

Synthesis and characterization of complex compounds of 8-hydroxyquinoline copper (II) has been done. Synthesis of8- hydroxyquinoline copper (II) is done by mixing $CuSO_45H_2O$ with different concentration of ammonia and 8- hydroxyquinoline ligand in methanol. Product performed with magnetic stirrer, filtered, washed and dried in a desiccator. The results is obtained precipitated 8-hydroxyquinoline is copper (II) green-yellow. Characterization of complex compound was done by analysis of UV-Vis, AAS and FTIR. UV-Vis analysis results of 8-hydroxyquinoline copper (II) have a maximum wavelength at 394 nm, FTIR analysis results indicate the presence of N atom and O atom of C-O clusters in 8-hydroxyquinoline ligand was bonding with Cu (II)atom. If concentration of ammonia increasing, complex 8 – hydroxyquinoline copper (II) was obtaineddecreasing.

Keywords: Synthesis, complex compound Cu- 8-hydroxyquinoline

[a]Chemistry Department,Mathematics and Sciences Faculty, Diponegoro University

Corresponding author e-mail address: suhartanagi_putra@yahoo.com

Introduction

Oxine or 8- hydroxyquinoline (C_9H_7ON) forms sparingly soluble derivatives with metallic ions, which have the composition $M(C_9H_7ON)_2$ if co- coordination number of the metal is four (e.g., magnesium, zinc, cooper, cadmium, lead and indium), $M(C_9H_7ON)_3$ if the co- coordination number is six (e.g., aluminium, iron, bismuth, and gallium), and M $(C_9H_7ON)_4$ if the co-coordination number is eight (e.g., thorium and zirconium). There are, however, some exceptions, for examples, TiO $(C_9H_7ON)_2$, MnO_2 $(C_9H_7ON)_2$, WO_2 $(C_9H_7ON)_2$, and $UO_2(C_9H_7ON)_2$ (Vogel, 1978).

Copper (Cu)

Copper, silver and gold are in group 11 of the periodic table, and they share certain attributes. They have one s- orbital electron on top of filled d- electron shell and are characterized by high ductility and electrical conductivity. The filled d- shells in these elements do not contribute much to the inter atomic interaction, which are dominated by the s- electrons through metallic bonds. Unlike in metals with incomplete d-shells, metallic bonds copper are lacking a covalent character and are relatively weak [Huheey, 1981].

The softness of copper partly explains its high electrical conductivity (59.6 x 10^6 s/m) and thus also high thermal conductivity, which are the second highest among pure metals at room temperature. This is because the resistivity to electron transport in metals at room temperature mostly originates from scattering of electrons on thermal vibrations of the lattice, which relatively weak for a soft metal[Huheey, 1981].

Copper has 29 atomic number, they are 29 isotopes of copper. ^{63}Cu and ^{65}Cu are stable, with ^{63}Cu comprising approximately 69 % of naturally occurring copper. The other isotopes (^{62}Cu, ^{63}Cu and ^{67}Cu) are radioactive. Copper is present in the earth crust at a concentration of about 50 part per million (ppm), where occurs as native copper or in minerals such as the copper sulphides *chalcopyrite* or *chalcocite*, the copper carbonate *azurite* and *malachite*, and the copper (I) oxide mineral *cuprite* (Cotton and Wilkinson, 1988).

8- Hydroxyquinoline

The 8- hydroxyquinoline and its derivatives are widely used as analytical reagent [Raj, et all, 2001] and anti-amoebic agents, 8- hydroxyquinoline behaves as bidentate (N & O^-) univalent ligand to form chelates with several metals ions [Basollo, 1973]. 8-Hydroxyquinoline and its derivatives are widely used as ligand. 8- Hydroxyquinoline has 145,16 g/mol mass relatively, white powder, not soluble with aquadest, but soluble at organic solvent and acids, acetic acid for example (Underwood, 1980).

8- hydroxyquinoline behaves as bidentate (N & O^-) and used as ligand in synthesis complexes compounds. Structure of 8- hydroxyquinoline:

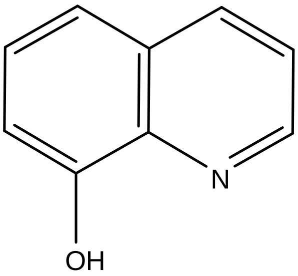


Figure 1. Structure if hydroxyquinoline

8-hydroxiquinoline has melting point 74-76 °C and has boiling point 276 °C, density 1.034 g/mol. The 8-hydroxiquinoline and this derivatives would be used as therapeutics as antibacterial, antifungal, as well as for treatment tuberculosis, diabetes and malaria (Soekardjo, 1995).

Derivatives 8-hydroxiquinoline have been used as tropical antiseptic and internal disinfectants that apparently exhibits low toxicity for human (Underwood, 1998).

This research Cu metals used as centre atom and 8-hydroxyquinoline used as ligand. 8- hydroxyquinoline ligand has O at CO bonding and N as electron donor [Huheey, 1981]. So bonding Cu metals and 8-hydroxyquinoline ligand has been obtained. “Continue Variation” method has done to form 8-hydroxyquinoline copper (II) (Sugiarto, 2009).

Synthesis 8- hydroxyquinoline copper (II) this research has done with mixing/ reaction $CuSO_4.5H_2O$ with 8-hydroxyquinoline (in methanol as solvent) in different ammonia concentration. Mixing by magnetic stirrer. Result obtained dried by desiccator, precipitate grey-yellow was obtained, this is 8- hydroxyquinoline copper (II) complex.

Result 8- hydroxyquinoline copper (II) has analysed by UV-Vis, spectrophotometry, AAS and FTIR. from UV-Vis spectra wavelength maximum at 394 nm, FTIR analysed show interaction Cu metal with N atom and atom O at C-O bonding from 8-hydroxiquinoline is bonding as coordination bond. If concentration of ammonia increasing, complex 8 – hydroxyquinoline copper (II) was obtained decreasing.

Methodology

Materials

$CuSO_4.5H_2O$ p.a (Merck), Hydroxyquinoline p.a (Merck), methanol p.a (Merck), ammonia solution, aquabidest and aquadest.

Tool Volume pipet, beaker glass, analytical balance, magnetic stirrer, heating mantle, desiccator, funnel, reflux, FTIR spectrophotometer Shimadzu prestige 21, spectrophotometer UV-Vis Shimadzu 1601, atomic absorptions spectrophotometer (AAS), Whatmann paper.

Procedure

8-hydroxyquinoline Cuprum (II) synthesis

Becker glass I An aqueous solution contents of $CuSO_4.5H_2O$ (0.395 g) with ammonia concentration various (0,01M, 0,02M, 0,03M, 0,04M, 0,05 M and 0,07M) was soluble at 10 ml aquadest, Becker glass II Have contents 8- hydroxyquinoline soluble at methanol 10 ml. Becker glass I was added for Becker glass II dispensing drop by drop. Result obtained was reflux and mix by magnetic stirrer until 3 hour, and precipitate was obtained. Precipitated was filtered and wash by methanol and dried at desiccator until 3 days. Precipitate has grey- yellow colour, this is 8-hdroxyquinoline copper (II) complex. Base data, if concentration of ammonia increasing, Cu (II)- 8 – hydroxyquinoline complex was decreasing obtained, indicated with the colour grey-yellow for the complex is less. Analysis the complex was done with UV-Vis spectrophotometry, AAS, and FTIR.

Result and Discussion

Synthesis 8-hydroxyquinoline Copper (II) has done with mixing/ reaction $CuSO_4.5H_2O$ with 8-hydroxyquinoline (in methanol as solvent) in different ammonia concentration. Mixing by magnetic stirrer. Result obtained dried by desiccator, precipitate grey-yellow was obtained, this is 8- hydroxyquinoline copper (II) complex.

Result 8- hydroxyquinoline copper (II) has analysed by UV-Vis, spectrophotometry, AAS and FTIR. from UV-Vis spectra wavelength maximum at 394 nm, FTIR analysed show interaction Cu metal with N atomic and atomic O at C-O bonding from 8-hydroxiquinoline as coordination bond.

Ammonia Variation

An aqueous $CuSO_4$ solution with ammonia concentration differently has result different. An aqueous $CuSO_4$ solution without ammonia the product is light blue. But if An aqueous $CuSO_4$ solution with ammonia the product is blue, this is tetramine copper (II) compound. If ammonia concentration is increase, the result 8-hydroxiquinoline copper (II) is decrease. This indicate by 8-hydroxiquinoline copper (II) grey-yellow is less. If ammonia concentration is increase, the system would be reaction Cu^{2+} with 8-hydroxiquinoline to form Tetramine Copper(II). So the 8-hydroxyquinoline copper (II) complex is decrease.

Ammonia Effect for 8-hydroxiquinoline copper (II) synthesis

From AAS data, If ammonia concentration is increasing, the result 8-hydroxiquinoline copper (II) is decreasing. This data would prove Cu^{2+} ion remainder obtained increasing, like table 1. This data would showed, if Ammonia concentration is increase, so Tetramine Copper(II) complex in solution is increase too. Copper(II) complex would be contribute to blocked Cu^{2+} ions to react with 8-hydroxiquinoline.

Table 1. Concentration Cu^{2+} at Variation Ammonia concentration

[Cu^{2+}] total	**[Ammonia]**	**[Cu^{2+}] remainder**
100 ppm	0.01 M	3.4 ppm
100 ppm	0.02 M	4.2 ppm
100 ppm	0.03 M	6.8 ppm
100 ppm	0.04 M	9.6 ppm
100 ppm	0.05 M	12.8 ppm
100 ppm	0.07 M	18.2 ppm

UV-Vis characterization

The adsorption and assignments related the ligand and the complex showed in Figure 2. Analysisspectrophotometry UV-Vis has used for establish λ_{max} (nm) sample. This wavelength used to trace λ_{max} (nm) $CuSO_4.5H_2O$ and λ_{max} (nm) 8-hydroxyquinoline copper (II) complex, after reaction was occurred.

The spectra where the electronic configuration of the metal d^{10}continuous adsorption of any (d -- d) transition. According the spectra data as well as those obtained from elemental analysis the chemical structure of the complex may be suggested for 8-hydroxyquinoline copper (II) complex. Change of wavelength, from 817 nm ($CuSO_4.5H_2O$) to 394 nm (8-hydroxyquinoline copper (II) complex) is indicated coordination bonding would be obtained. (Fessenden, 1986).

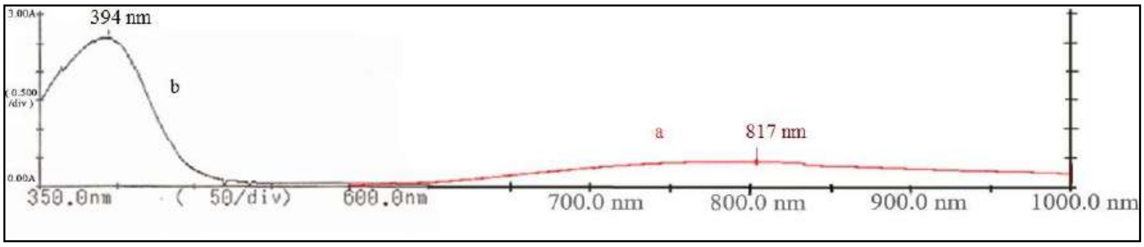


Figure 2 Spectra UV-VIS (a). $CuSO_4.5H_2O$, (b). 8-hydroksikuinolin copper (II) at methanol solvent

Transition electronic Energy 10Dq from $CuSO_4.5H_2O$ and 8-hydroxyiquinoline copper (II) showed table 3. Complex compounds usually has colour. Colour obtained not colour adsorption, but reflection from complement colour. Complement colour is overall wavelength from 8-hydroxiquinoline copper (II) complex. This complex have λ_{max} 394 nm, at UV area, because peak was obtained from ultraviolet UV-Vis area and adsorption wavelength from violet to blue (Fessenden, 1986).

Table 3:Wavelengthand 10Dq Energy for $CuSO_4.5H_2O$ and 8-hydroxyquinoline cuprum (II) complex

No.	Compound	λ_{max} (nm)	10Dq (KJ/mol)
1.	$CuSO_4.5H_2O$	817	146,288
2.	8-hydroxyquinoline copper (II) complex	394	303,343

IR characterization

The characteristic vibration and assignments of ligand 8-hydroyquinoline and complex compound are showed in figure 4 and analysed the IR spectra are described in table 5.

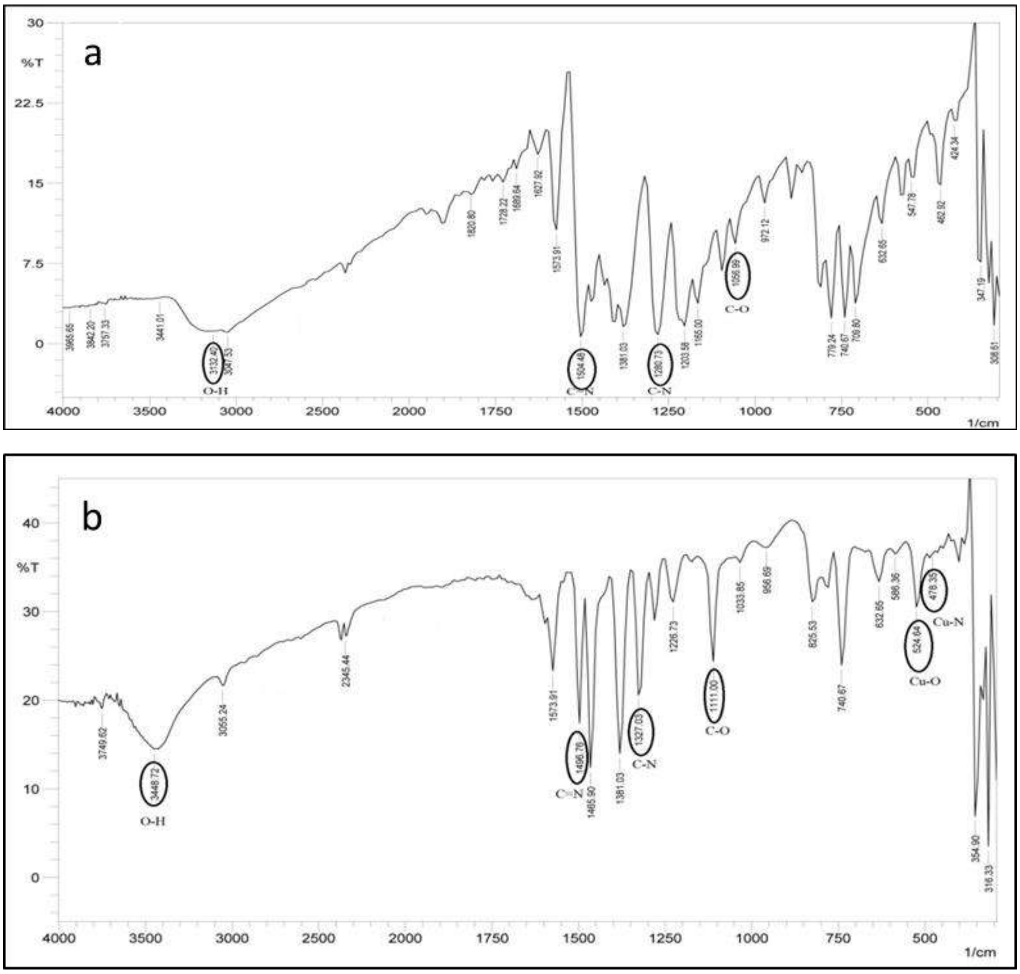


Figure 4 (a.) IR Spectra 8-hydroxyquinoline, (b.) 8 – hydroxyquinoline copper (II).

Table 5: IR spectra

Peak	8-hydroxyquinoline (cm^{-1})	8 -hydroxyquinoline copper (II). (cm^{-1})
v O-H stretch	3132.4	3448.7
v C=N stretch aromatic	1504.4	1496.7
v C-N stretch aromatic	1280.7	1327.0
v C-O stretch phenol	1056.9	1111.0
v Cu-N	-	478.3
v Cu-O	-	524.6

The spectrum of phenol exhibited the strong band of 1056,9 cm^{-1} for 8-hydroxy-quinoline and 1111 cm^{-1} for 8 -hydroxyquinoline copper (II). While another strong adsorption bands at 1280 cm^{-1} for 8-hydroxyquinoline and 1327 cm^{-1} for 8 -hydroxyquinoline copper (II).

The spectra of complex.

The spectra exhibited amarked difference the adsorption band (Figure: IV.3) belonging to be stretching vibration of V (C-O) of the carbonyl group have been found in the range between (1100 cm^{-1}-1200 cm^{-1}). According data, suggesting the possibility of the bonding complex compound is coordination bond of the ligand 8-hydroxyquinoline through the oxygen atomic in carbonyl group.

Adsorption assigned for V (C-N) was noticed at the range 1300 cm^{-1}-1350 cm^{-1} shifted to the higher frequencies. Adsorption assigned for V (Cu-N) was noticed at the range 478,3 cm^{-1} and V (C-O) was noticed at the range 500 cm^{-1} – 550 cm^{-1}, which indicate the coordination of nitrogen atomic of the V (C-N) group and oxygen atomic of the V (C-O) group to the central copper ion.

Conclusion

In this study,8- hydroxyquinoline (8HQ) copper (II) synthesis, were investigated:

1. $CuSO_4$ 5 H_2O has UV- Vis characteristic adsorption at λ_{max} 817 nm, and 8- hydroxyquinoline (8HQ) copper (II) has UV-Vis characteristic adsorbtion at λ_{max} 394 nm.

2. 8-hydroxyquinoline would coordinate bond with Cu^{2+} ion, by N atomic and O atomic.

Acknowledgments

I would like to thank my student laelatri Agustina, also my friend Sri Atun for her support during my experiment. You have helped so much, there is no way I could possibly ever repay you.

Reference

Cotton, F.A. and Wilkinson, G., 1988, *Advanced Inorganic Chemistry*, Edisi ke 5, John Wiley & Sons Inc, New York

Huheey, J.E., and Keitr, R. L., 1993, *Inorganic Chemistry, Principle of Structure and Reactivity*, Edisi ke 2, Harper Collin Collage Publisher, New York

Jolly WL., 1978, The Synthesis and Characterization of Inorganic Compounds, Prentice hall Inc, New York.

Sukardjo, 1995, *Kimia Koordinasi*, Rineka Cipta, Jakarta

Sugiarto, 2006, Sintesis dan Karakterisasi Kompleks Di (8- hidroksiquinolin) tembaga (II) trihidrat dan Kompleks Tri (8- hidroksiquinolin) besi (III) dihydrate, Skripsi, FMIPA UNS, Surakarta

Underwood, A. L. & Day, R. A, 2002, *Analisis Kimia Kuantitatif*, Edisi Keenam, Penerbit Erlangga, Jakarta.

Vogel, A.I., 1978, A Text Book of Quantitative Inorganic Analysis, Fourth edition, The English Language Book Society and Longman, New York.

Influences of Ammonia for Synthesis of 8-Hydroxiquinoline Copper(II)

by Sriatun Sriatun

Submission date: 25-Apr-2020 11:06PM (UTC+0700)

Submission ID: 1307518353

File name: es_of_Ammonia_for_Synthesis_of_8-Hydroxiquinoline_Copper_II.pdf (663.85K)

Word count: 2164

Character count: 12264

Influences of Ammonia for Synthesis of 8-Hydroxiquinoline Copper(II)

Suhartana, Laelatri Agustina, Sriatun

Abstract

Synthesis and characterization of complex compounds of 8-hydroxyquinoline copper (II) has been done. Synthesis of8- hydroxyquinoline copper (II) is done by mixing $CuSO_45H_2O$ with different concentration of ammonia and 8- hydroxyquinoline ligand in methanol. Product performed with magnetic stirrer, filtered, washed and dried in a desiccator. The results is obtained precipitated 8-hydroxyquinoline is copper (II) green-yellow. Characterization of complex compound was done by analysis of UV-Vis, AAS and FTIR. UV-Vis analysis results of 8-hydroxyquinoline copper (II) have a maximum wavelength at 394 nm, FTIR analysis results indicate the presence of N atom and O atom of C-O clusters in 8-hydroxyquinoline ligand was bonding with Cu (II)atom. If concentration of ammonia increasing, complex 8 – hydroxyquinoline copper (II) was obtaineddecreasing.

Keywords: Synthesis, complex compound Cu- 8-hydroxyquinoline

[a]Chemistry Department,Mathematics and Sciences Faculty, Diponegoro University

Corresponding author e-mail address: suhartanagi_putra@yahoo.com

Introduction

Oxine or 8- hydroxyquinoline (C_9H_7ON) forms sparingly soluble derivatives with metallic ions, which have the composition $M(C_9H_7ON)_2$ if co- coordination number of the metal is four (e.g., magnesium, zinc, cooper, cadmium, lead and indium), $M(C_9H_7ON)_3$ if the co- coordination number is six (e.g., aluminium, iron, bismuth, and gallium), and $M(C_9H_7ON)_4$ if the co-coordination number is eight (e.g., thorium and zirconium). There are, however, some exceptions, for examples, $TiO(C_9H_7ON)_2$, $MnO_2(C_9H_7ON)_2$, $WO_2(C_9H_7ON)_2$, and $UO_2(C_9H_7ON)_2$ (Vogel, 1978).

Copper (Cu)

Copper, silver and gold are in group 11 of the periodic table, and they share certain attributes. They have one s- orbital electron on top of filled d- electron shell and are characterized by high ductility and electrical conductivity. The filled d- shells in these elements do not contribute much to the inter atomic interaction, which are dominated by the s- electrons through metallic bonds. Unlike in metals with incomplete d-shells, metallic bonds copper are lacking a covalent character and are relatively weak [Huheey, 1981].

The softness of copper partly explains its high electrical conductivity (59.6 x 10^6 s/m) and thus also high thermal conductivity, which are the second highest among pure metals at room temperature. This is because the resistivity to electron transport in metals at room temperature mostly originates from scattering of electrons on thermal vibrations of the lattice, which relatively weak for a soft metal[Huheey, 1981].

Copper has 29 atomic number, they are 29 isotopes of copper. ^{63}Cu and ^{65}Cu are stable, with ^{63}Cu comprising approximately 69 % of naturally occurring copper. The other isotopes (^{62}Cu, ^{63}Cu and ^{67}Cu) are radioactive. Copper is present in the earth crust at a concentration of about 50 part per million (ppm), where occurs as native copper or in minerals such as the copper sulphides *chalcopyrite* or *chalcocite*, the copper carbonate *azurite* and *malachite*, and the copper (I) oxide mineral *cuprite* (Cotton and Wilkinson, 1988).

8- Hydroxyquinoline

The 8- hydroxyquinoline and its derivatives are widely used as analytical reagent [Raj, et all, 2001] and anti-amoebic agents, 8- hydroxyquinoline behaves as bidentate (N & O^-) univalent ligand to form chelates with several metals ions [Basollo, 1973]. 8-Hydroxyquinoline and its derivatives are widely used as ligand. 8- Hydroxyquinoline has 145,16 g/mol mass relatively, white powder, not soluble with aquadest, but soluble at organic solvent and acids, acetic acid for example (Underwood, 1980).

8- hydroxyquinoline behaves as bidentate (N & O^-) and used as ligand in synthesis complexes compounds. Structure of 8- hydroxyquinoline:

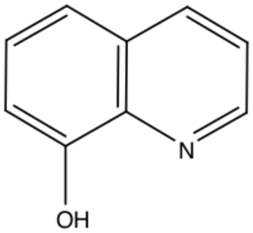


Figure 1. Structure if hydroxyquinoline

8-hydroxiquinoline has melting point 74-76 °C and has boiling point 276 °C, density 1.034 g/mol. The 8-hydroxiquinoline and this derivatives would be used as therapeutics as antibacterial, antifungal, as well as for treatment tuberculosis, diabetes and malaria (Soekardjo, 1995).

Derivatives 8-hydroxiquinoline have been used as tropical antiseptic and internal disinfectants that apparently exhibits low toxicity for human (Underwood, 1998).

This research Cu metals used as centre atom and 8-hydroxyquinoline used as ligand. 8- hydroxyquinoline ligand has O at CO bonding and N as electron donor [Huheey, 1981]. So bonding Cu metals and 8-hydroxyquinoline ligand has been obtained. "Continue Variation" method has done to form 8-hydroxyquinoline copper (II) (Sugiarto, 2009).

Synthesis 8- hydroxyquinoline copper (II) this research has done with mixing/ reaction $CuSO_4.5H_2O$ with 8-hydroxyquinoline (in methanol as solvent) in different ammonia concentration. Mixing by magnetic stirrer. Result obtained dried by desiccator, precipitate grey-yellow was obtained, this is 8- hydroxyquinoline copper (II) complex.

Result 8- hydroxyquinoline copper (II) has analysed by UV-Vis, spectrophotometry, AAS and FTIR. from UV-Vis spectra wavelength maximum at 394 nm, FTIR analysed show interaction Cu metal with N atom and atom O at C-O bonding from 8-hydroxiquinoline is bonding as coordination bond. If concentration of ammonia increasing, complex 8 – hydroxyquinoline copper (II) was obtained decreasing.

Methodology

Materials

$CuSO_4.5H_2O$ p.a (Merck), Hydroxyquinoline p.a (Merck), methanol p.a (Merck), ammonia solution, aquabidest and aquadest.

Tool Volume pipet, beaker glass, analytical balance, magnetic stirrer, heating mantle, desiccator, funnel, reflux, FTIR spectrophotometer Shimadzu prestige 21, spectrophotometer UV-Vis Shimadzu 1601, atomic absorptions spectrophotometer (AAS), Whatmann paper.

Procedure

8-hydroxyquinoline Cuprum (II) synthesis

Becker glass I An aqueous solution contents of $CuSO_4.5H_2O$ (0.395 g) with ammonia concentration various (0,01M, 0,02M, 0,03M, 0,04M, 0,05 M and 0,07M) was soluble at 10 ml aquadest, Becker glass II Have contents 8- hydroxyquinoline soluble at methanol 10 ml. Becker glass I was added for Becker glass II dispensing drop by drop. Result obtained was reflux and mix by magnetic stirrer until 3 hour, and precipitate was obtained. Precipitated was filtered and wash by methanol and dried at desiccator until 3 days. Precipitate has grey- yellow colour, this is 8-hdroxyquinoline copper (II) complex. Base data, if concentration of ammonia increasing, Cu (II)- 8 – hydroxyquinoline complex was decreasing obtained, indicated with the colour grey-yellow for the complex is less. Analysis the complex was done with UV-Vis spectrophotometry, AAS, and FTIR.

Result and Discussion

Synthesis 8-hydroxyquinoline Copper (II) has done with mixing/ reaction $CuSO_4.5H_2O$ with 8-hydroxyquinoline (in methanol as solvent) in different ammonia concentration. Mixing by magnetic stirrer. Result obtained dried by desiccator, precipitate grey-yellow was obtained, this is 8- hydroxyquinoline copper (II) complex.

Result 8- hydroxyquinoline copper (II) has analysed by UV-Vis, spectrophotometry, AAS and FTIR. from UV-Vis spectra wavelength maximum at 394 nm, FTIR analysed show interaction Cu metal with N atomic and atomic O at C-O bonding from 8-hydroxiquinoline as coordination bond.

Ammonia Variation

An aqueous $CuSO_4$ solution with ammonia concentration differently has result different. An aqueous $CuSO_4$ solution without ammonia the product is light blue. But if An aqueous $CuSO_4$ solution with ammonia the product is blue, this is tetramine copper (II) compound. If ammonia concentration is increase, the result 8-hydroxiquinoline copper (II) is decrease. This indicate by 8-hydroxiquinoline copper (II) grey-yellow is less. If ammonia concentration is increase, the system would be reaction Cu^{2+} with 8-hydroxiquinoline to form Tetramine Copper(II). So the 8-hydroxyquinoline copper (II) complex is decrease.

Ammonia Effect for 8-hydroxiquinoline copper (II) synthesis

From AAS data, If ammonia concentration is increasing, the result 8-hydroxiquinoline copper (II) is decreasing. This data would prove Cu^{2+} ion remainder obtained increasing, like table 1. This data would showed, if Ammonia concentration is increase, so Tetramine Copper(II) complex in solution is increase too. Copper(II) complex would be contribute to blocked Cu^{2+} ions to react with 8-hydroxiquinoline.

Table 1. Concentration Cu^{2+} at Variation Ammonia concentration

[Cu^{2+}] total	[Ammonia]	[Cu^{2+}] remainder
100 ppm	0.01 M	3.4 ppm
100 ppm	0.02 M	4.2 ppm
100 ppm	0.03 M	6.8 ppm
100 ppm	0.04 M	9.6 ppm
100 ppm	0.05 M	12.8 ppm
100 ppm	0.07 M	18.2 ppm

UV-Vis characterization

The adsorption and assignments related the ligand and the complex showed in Figure 2. Analysisspectrophotometry UV-Vis has used for establish λ_{max} (nm) sample. This wavelength used to trace λ_{max} (nm) $CuSO_4.5H_2O$ and λ_{max} (nm) 8-hydroxyquinoline copper (II) complex, after reaction was occurred.

The spectra where the electronic configuration of the metal d^{10}continuous adsorption of any (d -- d) transition. According the spectra data as well as those obtained from elemental analysis the chemical structure of the complex may be suggested for 8-hydroxyquinoline copper (II) complex. Change of wavelength, from 817 nm ($CuSO_4.5H_2O$) to 394 nm (8-hydroxyquinoline copper (II) complex) is indicated coordination bonding would be obtained. (Fessenden, 1986).

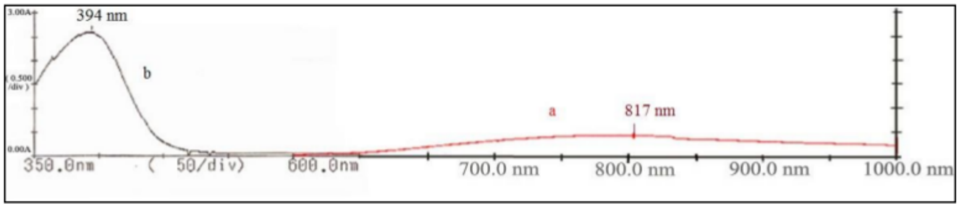


Figure 2 Spectra UV-VIS (a). $CuSO_4.5H_2O$, (b). 8-hydroksikuinolin copper (II) at methanol solvent

Transition electronic Energy 10Dq from $CuSO_4.5H_2O$ and 8-hydroxyiquinoline copper (II) showed table 3. Complex compounds usually has colour. Colour obtained not colour adsorption, but reflection from complement colour. Complement colour is overall wavelength from 8-hydroxiquinoline copper (II) complex. This complex have λ_{max} 394 nm, at UV area, because peak was obtained from ultraviolet UV-Vis area and adsorption wavelength from violet to blue (Fessenden, 1986).

Table 3:Wavelengthand 10Dq Energy for $CuSO_4.5H_2O$ and 8-hydroxyquinoline cuprum (II) complex

No.	Compound	λ_{max} (nm)	10Dq (KJ/mol)
1.	$CuSO_4.5H_2O$	817	146,288
2.	8-hydroxyquinoline copper (II) complex	394	303,343

IR characterization

The characteristic vibration and assignments of ligand 8-hydroyquinoline and complex compound are showed in figure 4 and analysed the IR spectra are described in table 5.

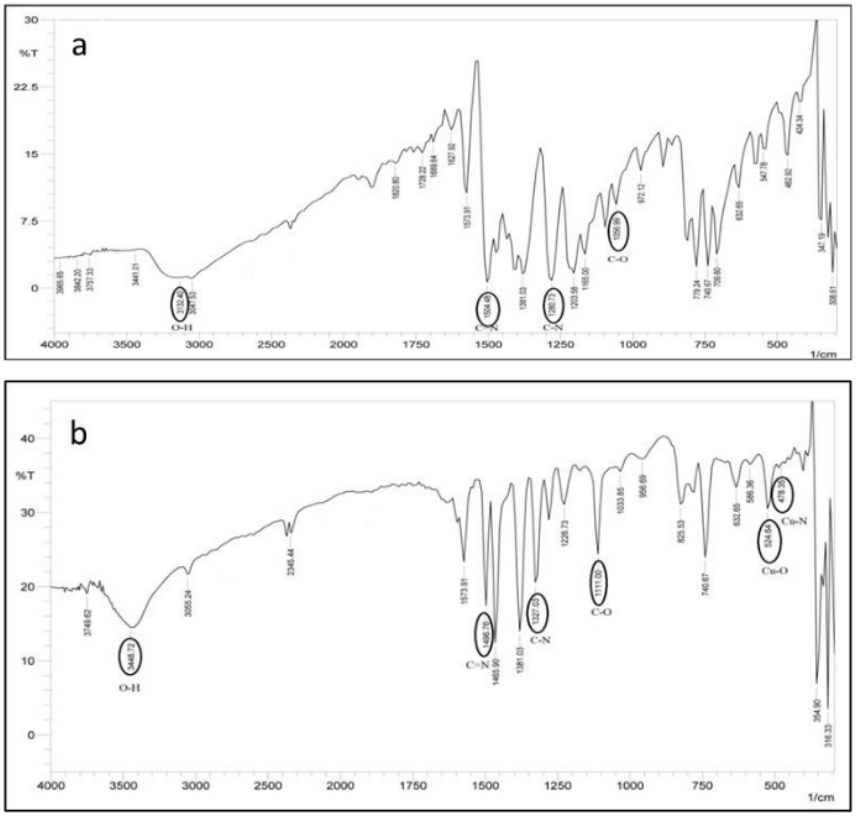


Figure 4 (a.) IR Spectra 8-hydroxyquinoline, (b.) 8 – hydroxyquinoline copper (II).

Table 5: IR spectra

Peak	8-hydroxyquinoline (cm^{-1})	8 -hydroxyquinoline copper (II). (cm^{-1})
v O-H stretch	3132.4	3448.7
v C=N stretch aromatic	1504.4	1496.7
v C-N stretch aromatic	1280.7	1327.0
v C-O stretch phenol	1056.9	1111.0
v Cu-N	-	478.3
v Cu-O	-	524.6

The spectrum of phenol exhibited the strong band of 1056,9 cm^{-1} for 8-hydroxy-quinoline and 1111 cm^{-1} for 8 -hydroxyquinoline copper (II). While another strong adsorption bands at 1280 cm^{-1} for 8-hydroxyquinoline and 1327 cm^{-1} for 8 -hydroxyquinoline copper (II).

The spectra of complex.

The spectra exhibited amarked difference the adsorption band (Figure: IV.3) belonging to be stretching vibration of V (C-O) of the carbonyl group have been found in the range between (1100 cm^{-1}-1200 cm^{-1}). According data, suggesting the possibility of the bonding complex compound is coordination bond of the ligand 8-hydroxyquinoline through the oxygen atomic in carbonyl group.

Adsorption assigned for V (C-N) was noticed at the range 1300 cm^{-1}-1350 cm^{-1} shifted to the higher frequencies. Adsorption assigned for V (Cu-N) was noticed at the range 478,3 cm^{-1} and V (C-O) was noticed at the range 500 cm^{-1} – 550 cm^{-1}, which indicate the coordination of nitrogen atomic of the V (C-N) group and oxygen atomic of the V (C-O) group to the central copper ion.

Conclusion

In this study,8- hydroxyquinoline (8HQ) copper (II) synthesis, were investigated:

1. $CuSO_4$ 5 H_2O has UV- Vis characteristic adsorption at λ_{max} 817 nm, and 8- hydroxyquinoline (8HQ) copper (II) has UV-Vis characteristic adsorbtion at λ_{max} 394 nm.
2. 8-hydroxyquinoline would coordinate bond with Cu^{2+} ion, by N atomic and O atomic.

Acknowledgments

I would like to thank my student laelatri Agustina, also my friend Sri Atun for her support during my experiment. You have helped so much, there is no way I could possibly ever repay you.

Reference

Cotton, F.A. and Wilkinson, G., 1988, *Advanced Inorganic Chemistry*, Edisi ke 5, John Wiley & Sons Inc, New York

Huheey, J.E., and Keitr, R. L., 1993, *Inorganic Chemistry, Principle of Structure and Reactivity*, Edisi ke 2, Harper Collin Collage Publisher, New York

Jolly WL., 1978, The Synthesis and Characterization of Inorganic Compounds, Prentice hall Inc, New York.

Sukardjo, 1995, *Kimia Koordinasi*, Rineka Cipta, Jakarta

Sugiarto, 2006, Sintesis dan Karakterisasi Kompleks Di (8- hidroksiquinolin) tembaga (II) trihidrat dan Kompleks Tri (8- hidroksiquinolin) besi (III) dihydrate, Skripsi, FMIPA UNS, Surakarta

Underwood, A. L. & Day, R. A, 2002, *Analisis Kimia Kuantitatif*, Edisi Keenam, Penerbit Erlangga, Jakarta.

Vogel, A.I., 1978, A Text Book of Quantitative Inorganic Analysis, Fourth edition, The English Language Book Society and Longman, New York.

Influences of Ammonia for Synthesis of 8-Hydroxiquinoline Copper(II)

ORIGINALITY REPORT

17%	13%	6%	6%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

MATCH ALL SOURCES (ONLY SELECTED SOURCE PRINTED)

7%

★ oristar.vn

Internet Source

Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	Off		

Influences of Ammonia for Synthesis of 8-Hydroxiquinoline Copper(II)

GRADEMARK REPORT

FINAL GRADE

/100

GENERAL COMMENTS

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5