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

Judul Jurnal Ilmiah (Artikel) : **ANNEALING TEMPERATURE AND COCATALYST EFFECTS TO THE PHOTOELECTROCHEMICAL PROPERTY OF CuInS₂ THIN FILM SEMICONDUCTOR**

Nama/ Jumlah Penulis : **Gunawan/6**

Status Pengusul : penulis ke-1

Identitas Jurnal Ilmiah :

a. Nama Jurnal	: Rasayan J. Chem
b. Nomor ISSN	: 0974-1496
c. Vol, No., Bln Thn	: 14, 2, April-Juni 2021
d. Penerbit	: Rasayan Journal of Chemistry
e. DOI artikel (jika ada)	: http://dx.doi.org/10.31788/RJC.2021.1425818
f. Alamat web jurnal	: http://rasayanjournal.co.in/
Alamat Artikel	: http://rasayanjournal.co.in/admin/php/upload/3204_pdf.pdf
g. Terindex	: SCOPUS

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 (beri ✓ pada kategori yang tepat) ☐ Jurnal Ilmiah Nasional Terakreditasi
☐ Jurnal Ilmiah Nasional Tidak Terakreditasi

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Total = (100%)	40			38
Nilai Pengusul = 60% x 38 = 22.8				

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- Ruang lingkup dan kedalaman pembahasan:**
 Ruang lingkup jurnal ini tentang pengaruh temperatur annealing dan kokatalis pada sifat fotoelektrokimia semikonduktor film tipis CuInS₂. Pembahasannya cukup mendalam dengan menggunakan instrumentasi pengujian yg sangat baik. Pembahasannya disertai referensi yang menguatkan data yang diperoleh.
- Kecukupan dan kemutakhiran data/informasi dan metodologi:**
 Data/informasi yang disampaikan cukup baik dan mutakhir dan metodologinya disampaikan secara detil sehingga peneliti lain bisa mengacu penelitian ini. Referensi yang digunakan up to date (75% referensi kurang dari 5 th artikel terbit)
- Kelengkapan unsur dan kualitas terbitan:**
 Unsur artikel lengkap, kualitas jurnal baik Q3 bidang kimia (Rasayan journal of Chemistry).
 Artikel ini tidak dicantumkan kapan diterima dan terbit.

Semarang, 1 Agustus 2021
 Reviewer I



Prof. Dr. Dra. Meiny Suzery, M.S.
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 Bidang Ilmu: Kimia Organik

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b. Ruang lingkup dan kedalaman pembahasan (30%)	12			11,5
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	12			12
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12			10,5
Total = (100%)	40			38
Nilai Pengusul = 60% x 38 = 22.8				

Catatan Penilaian artikel oleh Reviewer :

1. Kesesuaian dan kelengkapan unsur isi jurnal:

Setiap bab dalam artikel saling menjelaskan satu sama lain. Artikel lengkap sesuai dengan kaidah penulisan karya ilmiah, yang terdiri dari Pendahuluan, metodologi, hasil dan pembahasan, kesimpulan, dan referensi. Referensi yang digunakan sebanyak 32 literatur, yang berasal dari jurnal bereputasi. (4)

2. Ruang lingkup dan kedalaman pembahasan:

Ruang lingkup artikel meliputi; sintesis semikonduktor CuInS₂ dengan metode elektrodeposisi, mengetahui pengaruh suhu anealing pada 600-800°C, karakterisasi XRD, Raman, dan SEM, dan analisa sifat photocurrent dengan deposisi PT atau Rh sebagai kokatalis. Pada pembahasan artikel, setiap metode mampu dijelaskan secara terperinci dan setiap data saling mendukung satu sama lain, dari data kurva arus-potensial, respon pada setiap suhu, karakterisasi raman, hingga data XRD, sehingga diperoleh kesimpulan bahwa kondisi maksimum semikonduktor adalah pada suhu 680°C. Sedangkan pada SEM, mampu menjelaskan sudut pandang yang berbeda dari pengaruh suhu annealing, artikel ini mampu memberikan dugaan yang didukung dengan data karakterisasi Raman. Fungsi kokatalis Pt juga mampu memberikan tambahan data yang mendukung kinerja material semikonduktor, bahwa Pt memiliki fungsi kerja yang relatif besar yaitu 5,65 ev, dan pada artikel juga dijelaskan alternatif lain, yaitu Rh sebagai kokatalis dengan fungsi kerja yang lebih kecil (4,98 ev). Meskipun pada akhirnya kedua kokatalis ketika didepositkan ke semikonduktor tidak menunjukkan kenaikan photocurrent yang signifikan, namun pada artikel mampu memberikan informasi yang valid sebagai bahan rujukan untuk penelitian selanjutnya. (12)

3. Kecukupan dan kemutakhiran data/informasi dan metodologi:

Informasi serta data yang ditampilkan dalam artikel ini sangat lengkap dan jelas dengan penjabaran yang mudah dipahami. Selain itu, referensi yang digunakan sebagian besar merupakan jurnal internasional yang bereputasi terbitan lima tahun terakhir. Sehingga, data-data yang disajikan dan metodologi yang digunakan cukup mutakhir. 75 persen referensi adalah terkini (5 tahun terakhir) (12)

4. Kelengkapan unsur dan kualitas terbitan:

RASAYAN Journal of Chemistry adalah jurnal penelitian ilmiah kimia triwulanan internasional peer-review yang

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Hasil Penilaian *Peer Review* :

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	Reviewer I	Reviewer II	
a. Kelengkapan unsur isi jurnal (10%)	4	4	4
b. Ruang lingkup dan kedalaman pembahasan (30%)	11.5	11.5	11.5
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	12	12	12
d. Kelengkapan unsur dan kualitas penerbit (30%)	10.5	10.5	10.5
Total = (100%)	38	38	38
Nilai untuk Pengusul : 60%x38 =22.8			

Reviewer 1

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Semarang,

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Bidang Ilmu: Kimia Analitik



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Annealing temperature and cocatalyst effects to the photoelectrochemical property of CuInS₂ thin film semiconductor

Gunawan^a , Haris A.^a, Widiyandari H.^b, Widodo D.S.^a, Septina W.^c, Ikeda S.^d Save all to author list^a Chemistry Department, Faculty of Science and Mathematics, Diponegoro University, Semarang, 50271, Indonesia^b Physics Department, Faculty of Mathematics and Natural Sciences, Sebelas Maret University, Surakarta, 57126, Indonesia^c Hawaii Natural Energy Institute University of Hawai'i at Mānoa (UHM), 1689 East West Road, POST 109, Honolulu, 96822, HI, United States^d Department of Chemistry, Faculty of Science and Engineering, Konan University, 8-9-1 Okamoto, Higashinada-ku, Kobe, 658-8501, Japan[Abstract](#)

Author keywords

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Abstract

Thin film of CuInS₂ semiconductor had been synthesized by copper and indium stack electrodepositions on a molybdenum glass substrate and followed by sulfurization at varied annealing temperatures of 600-800 °C. CuInS₂ thin film was characterized by using XRD, Raman, and SEM. Then on the CuInS₂ was deposited Pt with various deposition times and its photocurrent property was

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Fabrication of Pt/In₂S₃/CuInS₂ thin film as stable photoelectrode for water splitting under solar light irradiation

Matoba, K. , Matsuda, Y. , Takahashi, M.
(2021) *Catalysis Today*

Hexagonal phase/cubic phase homogeneous ZnIn₂S₄ n-n junction photoanode for efficient photoelectrochemical water splitting

Qian, H. , Liu, Z. , Guo, Z.
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A ZnO@CuO core-shell heterojunction photoanode modified with ZnFe-LDH for efficient and stable photoelectrochemical performance

Han, J. , Xing, H. , Song, Q.
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observed. Finally, Pt or Rh cocatalyst deposited on $\text{In}_2\text{S}_3\text{-CuInS}_2$ was also measured its photoelectrochemical property. XRD, Raman, and SEM data showed CuInS_2 had a different character with varied annealing temperatures. An annealing temperature of 680 °C gave a maximum photocurrent of CuInS_2 as a photocathode. The introduction of cocatalysts increased the photocurrent, even for Rh cocatalyst gave a better-applied bias photon-to-current efficiency than Pt. © 2021, Rasayan Journal of Chemistry, c/o Dr. Pratima Sharma. All rights reserved.

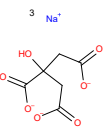
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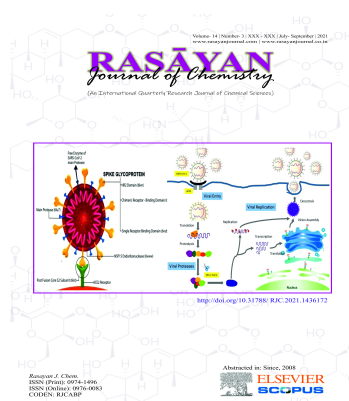
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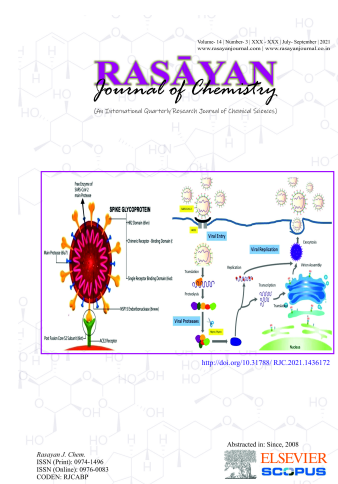
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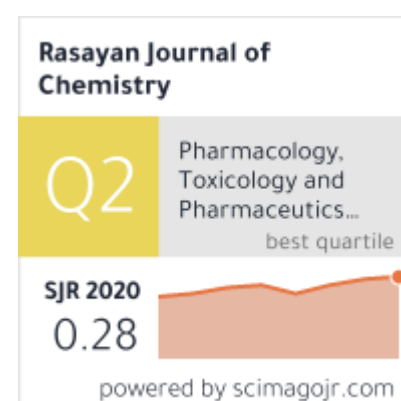
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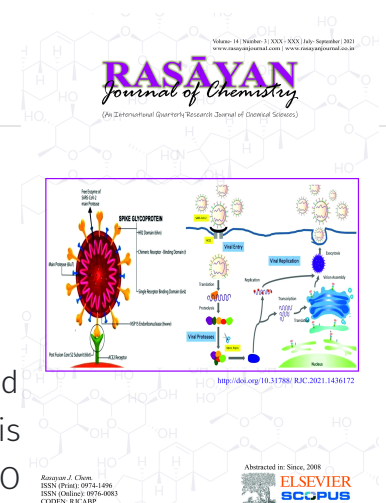


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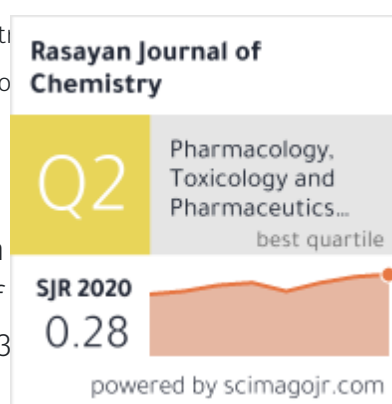
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PRODUCTION OF ELECTROPLATED RHENIUM COATINGS USING PULSATING CURRENTS — J. Bautista-Ruiz, W. Aperador and J.C. Caicedo		
A SIMPLE, FAST, AND INEXPENSIVE NONCHROMATOGRAPHIC METHOD FOR THE ISOLATION OF PINOSTROBIN FROM Boesenbergia rotunda RHIZOME — N. Fakhrudin, O. Pramiastuti and W. Subagus	9,867 Pageviews Aug 16th - Sep 16th 	
SYNTHESIS, STRUCTURAL CHARACTERIZATION OF SOME PYRAZOLO [1-5A] PYRIMIDINE AND IMIDAZO[1,2-B]- PYRAZOLE DERIVATIVES AS ANTI-CANCER ACTIVITY — Usama Fathy, Ameen A. Abu-Hashem, Rasha S. Gouhar, Hanem M. Awad and Abdelbaset M. Elgamal		
PHYTOCHEMICAL SCREENING AND Py-GC-MS ANALYSIS OF AGARWOOD LEAVES (Aquilaria malaccensis Lamk.) CULTIVATED IN BAHOROK, LANGKAT REGENCY, NORTH SUMATRA, INDONESIA — Ridwanti Batubara, Basuki Wirjosentono, Amir Hamzah Siregar, Urip Harahap and Tamrin		
STUDIES ON OPTICAL PROPERTIES OF PVA BASED COMPLEX POLYMER ELECTROLYTE — M. Gnana Kiran, N. Krishna Iyothi, K. Samatha, M. P. Rao and V. B. V. N. Prasad		
ISOLATION, CHARACTERIZATION, ANTIBIOLOGICAL, ANTICANCER ACTIVITY OF TETRAHYDROBENZO CHROMONE GLYCOSIDE DERIVATIVE FROM LEAF OF Melochia corchorifolia — M.Vinoth and B. Natarajan		
BITUMEN AND ASPHALT CONCRETE QUALITATIVE PROPERTIES IMPROVEMENT DEPENDING ON RUBBER CRUMB USING — K.K. Syrmanova, Z. K. Alipbekova, U.S. Suleimenov, Z.B. Kaldybekova, A.Y. Kovaleva and Y.T. Botashev		
KINETIC ANALYSIS OF OXIDATION OF α-HYDROXY ACIDS BY CARO'S ACID IN MICELLAR MEDIUM — P. Rajkumar, N. Buvaneswari, Z. Abdul Vaheith, A. Fiaz Ahamed, G. Saraswathy and R. Dayanandhan		
REDUCING NITRATE AND TOTAL PHOSPHATE BY USING OXIDATION DITCH WITH MICROALGAE Chlorella sp. REACTOR — Euis Nurul Hidayah, Okik Hendriyanto Cahyonugroho, Aulia Ulfah Farahdiba and Rizka Novembrianto		
AOBD BASED LC-UV METHOD FOR ASSESSMENT OF ANTIVIRAL DRUGS IN TERNARY MIXTURE — J. R. Tulasi, A. Prameela Rani, Pani Kumar Durga Anumolu		
Synadenium grantii Hook f.: HPLC/QTOF-MS/MS TENTATIVE IDENTIFICATION OF THE PHYTOCONSTITUENTS, ANTIOXIDANT, ANTIMICROBIAL AND ANTIBIOFILM EVALUATION OF THE AERIAL PARTS — Asmaa S. Abd Elkarim, Amal H. Ahmed, Hanan A.A. Taie, Abdelbaset M. Elgamal, Mohammed Abu-Elghait and Samah Shabana		
A BRIEF AND SPECIFIC REVIEW ON THE UTILITY OF SURFACE FUNCTIONALIZED MAGNETITE NANOPARTICLES FOR THE REMOVAL OF DYE FROM CONTAMINATED WATER — A. Jangra, P. Kumar, R. Khanna, A. Chaudhary, S. Kumar, J. Singh and R. Kumar		
PROCESS FOR REDUCING THE MAGNESIUM CONTENT IN INDUSTRIAL PHOSPHORIC ACID BY ITS PRECIPITATION TO MAGNESIUM FLUOROSILICATE — A. Boukhsib, L. Khamar, M. S. Kadiri and L. Omari		

INTERACTIONS OF THE CHEMICAL CONSTITUENTS OF *Eleutherine americana* (AUBL.) MERR. EX K. HEYNE WITH CYCLOOXYGENASE AND H5N1 RNA POLYMERASE: AN Insilico STUDY

— [S. Damayanti](#), [D. Puspaningrum](#), [H.N. Muhammad](#), [T. Amelia](#), [B.Permana](#), [R. Hartati](#) and [I. Wibowo](#)



SELECTIVE SYNTHESIS OF BENZALDEHYDES BY PERMANGANATE OXIDATION OF BENZYL ALCOHOLS IN NON-POLAR SOLVENTS UNDER PHASE TRANSFER CATALYSIS

— [P. Bashpa](#), [C. Kavitha](#) and [K. Bijudas](#)



EFFICIENT ONE POT SYNTHESIS, In-vitro ANTIOXIDANT ACTIVITIES OF Zn(II) COMPLEX WITH (E)-N1[(E)-3-PHENYLALLYLIDENE]BENZENE-1,2-DIAMINE

— [R. Selvarani](#), [S. Balasubramaniyan](#), [K. Rajasekar](#), [C. Veeravel](#) and [R. Geetha](#)



AMYLASE, PROTEASE, AND LIPASE ACTIVITY OF BUTTERFLY OF *Junonia almana* AND *Junonia atlites*

— [N. M. Saptarini](#), [D. Rahayu](#), and [N. Yesita](#)



SYNTHESIS AND CHARACTERIZATION OF ASTAXANTHINMETAL IONS (Cu2+ and Zn2+) COMPLEX

— [S. Wibowo](#), [B. D. Prakoso](#), [S. Najihah](#), [Z. H. Fajar](#), [S. Widyarti](#), [A. Sabarudin](#), [D. W. Soeatmadji](#) and [S. B. Sumitro](#)



MICROWAVE ASSISTED CATALYST AND SOLVENT FREE EFFICIENT SYNTHESIS OF QUINOLINE DERIVATIVES BY THREE COMPONENT ONE POT AZA-DIELS-ALDER REACTION STRATEGY

— [Debajyoti Bhuyan](#)



SYNTHESIS AND SPECTRAL CHARACTERIZATION OF MIXED LIGAND COMPLEXES: ALUMINIUM(III) CHELATES OF ORGANIC ACIDS WITH 1-NITROSO-2-NAPHTHOL

— [Ratnesh Kumar Singh](#), [Anju Kumari Gupta](#), [Sachin Prakash](#) and [D. Prakash](#)



Morinda citrifolia LEAF EXTRACT MEDIATED GREEN SYNTHESIS OF COPPER OXIDE NANOPARTICLES AND IT'S POTENTIAL AND ANTIBACTERIAL STUDIES

— [K. Sofiya Dayana](#), [R. lothi Mani](#) and [S.C. Vella Durai](#)



FABRICATION OF CERITINIB COCRYSTALS WITH IMPROVED SOLUBILITY: PREPARATION, SOLID-STATE CHARACTERIZATION, SOLUBILITY STUDIES, AND MOLECULAR DOCKING STUDIES

— [Ankit Awasthi](#), [H. M. Dheeraj](#), [Sumit Birangal](#), [Aravind Pai](#), [Girish Pai](#) and [Muddukrishna Badamane Sathyanarayana](#)



A SIMPLE GAS CHROMATOGRAPHY METHOD FOR THE QUANTITATIVE DETERMINATION OF RELATED IMPURITY (1,4-BUTANEDIOL) IN BUSULFAN DRUG

— [H. Ramakrishna Reddy](#), [S.R. Pratap](#), [N. Chandrasekhar](#) and [S.Z.M. Shamshuddin](#)



MOLECULAR DOCKING ANALYSIS OF *Azadirachta indica* CONSTITUENTS AS INHIBITORS OF AFLATOXIN POLYKETIDE SYNTHASE (APKS)

— [Solomon Abreham](#), [Merry Hailu](#), [Valsa Remony Manoj](#), [Yen-Po Chen](#), [Radhakrishnan Narayanaswamy](#)



ELECTRO-ANALYTICAL STUDIES OF FORMATION CONSTANTS OF MIXED-LIGANDS COMPLEXES OF CADMIUM(II) WITH SOME BIO-POTENTIALLY IMPORTANT AMINO ACIDS (L-GLYCINE, DL-THREONINE) AND "4,4,4- TRIFLUORO-1- (2-NAPHTHYL)BUTANE-1,3-DIONE" IN 60% ACETONITRILE MEDIUM

— [Laksh Choudhary](#) and [C. P. Singh Chandel](#)



STUDIES ON BIOSORPTION OF Pb(II) BY MAIZE STEM AND RICEHUSK POWDER

— [Anjana Kumari](#), [Ashok KumarJha](#) and [Kiran Kumari](#)



SYNTHESIS OF ANTIBACTERIAL ACTIVE SUBSTANCES 1- METHYL-2-PHENYL/O-TOLYL-6-SUBSTITUTEDPHENYL 1HBENZO[d]-IMIDAZOLE DERIVATIVES

— Havale Shrikant Hanumantappa, Bhavani Singh, Dharma Kishore, S. Venkat Rao and Jaya Dwivedi



HIGH PERFORMANCE LIQUID CHROMATOGRAPHY METHOD DEVELOPMENT AND VALIDATION FOR DETECTION AND QUANTIFICATION OF SUBSTANCES RELATED TO ALPHA KETO VALINE CALCIUM SALT

— Rajesh A. Jaday, Mrunal Ambasana and A. H. Bapodra



SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL SCREENING OF LIGAND 2-([2-(5-BENZOYL-1H-1,2,3-BENZOTRIAZOLE-1-YL)-2-OXOETHYL]AMINO} PROPIONIC ACID

— P. S. Desai and D. V. Parekh



ISOLATION AND CHARACTERIZATION OF THERMOPHILIC BACTERIA AS AMYLASE ENZYME PRODUCED BY HOTS SPRING IN RIANIATE SAMOSIR, INDONESIA

— S. Silaban, N. I. Y. Sihotang and K. Gurning



ONE-POT SYNTHESIS OF SPIRO-3,4-DIHYDRO-2HPYRROLES THROUGH TANDEM NUCLEOPHILIC CYCLISATION REACTION

— Nandkishor Chandan



NANOEMULSIFYING OF ETHANOLIC PAITAN LEAF EXTRACT (Tithonia Diversifolia (Hemsley) A. Gray) TO ENHANCED ANTIOXIDANT AND ANTIDIABETIC PROPERTIES

— A. Setyawati, N.C. Rizqi and C.A. Putri



A SPECTROPHOTOMETRIC ANALYSIS BY SYNTHESIZED NOVEL QUATERNARYPHOTOCATALYST ZrCdPbO4 FOR MINERALIZATION OF COLOURED POLLUTANT

— S. Lohar and S. Bhardwaj



REVIEW OF TECHNOGENIC WASTE AND METHODS OF ITS PROCESSING FOR THE PURPOSE OF COMPLEX UTILIZATION OF TAILINGS FROM THE ENRICHMENT OF NON-FERROUS METAL ORES AS A COMPONENT OF THE RAW MATERIAL MIXTURE IN THE PRODUCTION OF CEMENT CLINKER

— A.S. Kolesnikov, B. Ye Zhakipbaev, N.N. Zhanikulov, O.G. Kolesnikova, ?K. ?khetova, R.M. Kuraev and A.L. Shal



NANO-HYDROXYAPATITE AND ITS COMPOUNDS AND THEIR POTENTIAL IN THE FIGHT AGAINST COVID-19: A REVIEW

— A. R. Noviyanti, D. R. Eddy, Rukiah and Y. Deawati



THE EFFECT OF POTENTIAL AND TDS TO CURRENT EFFICIENCY IN MINERAL WATER ELECTROLYSIS WITH SOLAR ENERGY SOURCE FOR PRODUCING ALKALINE AND ACIDIC WATER

— Ekki Kurniawan, Husein Bahti, Anni Anggraeni and Iman Rahayu



EFFECT OF Sr2+DOPING ON THE STRUCTURAL, THERMAL, DIELECTRIC AND ELECTRICAL PROPERTIES OF La1-xSrxCo0.50Fe0.50 O3 {0.1≤ x≤ 0.4}CATHODE FOR SOFCS

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HIBRID MULTILAYER OF ZnO-SiO2/CHITOSAN NANORODS BY POLY(DIALLYLDIMETHYLAMMONIUM CHLORIDE)(PDDA) AND POLY(SODIUM 4-STYRENESULFONATE)(PSS)

— Yetria Rilda, Prima Vidya Puti Ayuni, Irianti Sabda Tursiah, Syukri Syukri, Refinel, Yulia Eka Putri, Anthoni Agustien and Hilfi Pardi





STUDY ON COMPLEX EQUILIBRIA BETWEEN DIVALENT TRANSITION METALS (Co, Ni AND Cu) AND L-METHIONINE IN A MEDIUM OF SLS-WATER MIXTURE

— R. Neeraja, G. H. Bindu, M. Ramanaiah and Y. V. Kumar



STUDY ON ENRICHMENT AND GEO-ACCUMULATION OF SOME TOXIC METALS IN SOILS OF INDUSTRIAL VICINITY, CHHATTISGARH, INDIA

— Simpal Tamrakar, Sumita Nair and S. K. Chatterjee



HYDROXYL FUNCTIONALIZED GRAPHENE AS A SUPERIOR ANODE MATERIAL FOR ELECTROCHEMICAL OXIDATION OF METHYLENE BLUE

— Yusbarina Yusbarina, Roto Roto and Kuwat Triyana



INFLUENCE OF CATIONIC AND ANIONIC POLYMERS ON STRENGTH AND SWELL BEHAVIOR OF EXPANSIVE SOIL

— Prashanta Poudel and S. Srividhya



CHEMICAL COMPOSITION, PHENOLIC, TANNIN AND ANTIOXIDANT ACTIVITY IN WATER AND METHANOL EXTRACT FROM MARINE MICROALGAE Oscillatoria sp.

— Nurhasanah, Ratnawati Lilasari Djanis and Askal Maimulyanti



THE EFFECT OF FUNCTIONAL GROUP IN POLYEUGENOL FOR UREA, CREATININE AND VITAMIN B12 TRANSPORT

— M.C. Djunaidi and I.G. Wenten



PHOTOVOLTAIC ANALYSIS OF FABRICATED DSSCs BASED ON NATURAL COLORANTS

— M. Devj, R. K. Saini and S. Shrivastava



SYNTHESIS AND CHARACTERIZATION OF NOVEL TRIAZINE COMPOUND AND THEIR BIOLOGICAL STUDIES

— Jayesh M. Pandya, Jyotindra Mahyavanshi and Smita Bakshi



PHYTOTOXIC INFLUENCE OF Tectona grandis L. ON GERMINATION, GROWTH AND BIOCHEMICAL CHANGES OF Solanum lycopersicum L. AND Solanum melongena L.

— K. Edwina and P. Leela



SULFUR-DOPED-TITANIA COATED ON MAGNETITE AS MAGNETICALLY RECOVERABLE PHOTOCATALYST FOR THE UV-VISIBLE LIGHT-ASSISTED-DEGRADATION OF CONGO RED SOLUTION

— E.S. Kunarti, I. Kartini, M.I.D. Mardjan and E.H. Prameswari



OBTAINING ENVIRONMENTALLY SAFE MIXED FERTILIZERS CONTAINING TRACE ELEMENTS BASED ON CARBONATE-SILICEOUS DOLOMITIZED PHOSPHATE RAW MATERIALS AND WASTES CHP

— K.T. Zhantasov, A. M. Kozhakhmetova, O. B. Dormeshkin, N. K. Sarypbekova, M. K. Zhantasov, O. P. Baiysbay and A. M. Dosbayeva



UNDERSTANDING PHYTOCHEMICAL ROLES ON α-GLUCOSIDASE INHIBITORY ACTIVITY BASED ON METABOLOMIC APPROACH OF Premna serratifolia LEAVES FROM WEST BORNEO, INDONESIA

— D. Hadiarti, W. Haryadi, S. Matsjeh and R. T. Swasono



HYDROGENATION OF AROMATIC NITRO COMPOUNDS TO AMINES ON NICKEL AND IRON-CONTAINING CATALYSTS

— L.R. Sassykova, A.R. Sassykova, Sh. N. Kubekova, A.A. Batyrbayeva, R. N. Azhigulova, Zh. M. Zhaxibayeva, M. A. Kozhaisakova, L. A. Zhusupova, S. Sendilvelan and O.I. Ponomarenko



SYNTHESIS, CHARACTERISATION, MOLECULAR DOCKING WITH BENZYL AND HUMAN DNA OF ANTIDYPINE BASED

SYNTHESIS, CHARACTERISATION MOLECULAR DOCKING WITH DENGUE AND HUMAN DNA OF ANTIPTYRINE BASED TRANSITION METAL COMPLEXES — K.N. Gita , V. Chanrasekaran and P. Akilan	
SYNTHESIS, SPECTROSCOPIC CHARACTERIZATION, AND ANTIMICROBIAL STUDIES OF SOME N/O DONAR LIGAND COMPLEXES OF Sn(IV) DERIVED FROM ISATINO-3- BENZHYDRAZONE — Punit Yadav , Ramhari Meena and Bidya S. Ioshi	
PHOTOLYSIS OF NAPHTHOL BLUE-BLACK FROM KUBANG WEAVING WASTE USING TiO2/ZEOLITE AS A CATALYST — Zilfa , Rahmayeni , B. Arifin , V. Sisca and E.S. Putri	
ADSORPTION OF CITRIC ACID ON IRON (III) HYDROXIDE: MECHANISMS AND STABILITY CONSTANTS OF SURFACE COMPLEXES — M. Hmamou , F. Maarouf , B. Ammary , and A. Bellaouchou	
PREPARATION OF PAHAE NATURAL ZEOLITE NANOPARTICLES USING HIGH ENERGY MILLING AND ITS POTENTIAL FOR BIOETHANOL PURIFICATION — Susilawati , Nasruddin M. N. , Yuan Alfinsyah Sihombing , Sri Ningsih Yazana Pakpahan , and Bonar Ferdiansyah	
KINETIC RELEASE STUDY OF DIABETES MELLITUS DRUG ENCAPSULATED ON CHITOSAN ALGINATE MATRIX — S. E. Cahyaningrum , Amaria and A. M. Sholikhah	
GREEN PLASTICS BASED ON THERMOPLASTIC STARCH AND STEAM-EXPLODED NANOFIBER CELLULOSE — E. Zaidar , S. Lenny , S.A. Amaturrehim , S.A. Situmorang , J.N. Sari , S.U. Rahayu and S. Gea	
ZnO CO-DOPED WITH Ni AND Mg: PREPARATON BY COPRECIPITATION, CHARACTERISATION AND EFFECT OF AMOUNT OF THE CO-DOPANTS ON THE BANDWIDTH OF ZnO — K. M. Sreedhar , Sangeeth Sivan , Karthik Raja , Kirti Suresh , R. Sreelekshmi , Appu Palat and K. M. Sreekanth	
PROSPECTS OF NANOTECHNOLOGY AS A TOOL TO MITIGATE COVID-19 — G. Pandey , S. Bajpai and S. Tripathi	
SYNTHESIS OF CURCUMIN FROM PIPERONAL AND ITS SPECTROMETRIC CHARACTERIZATION USING DFTB3LYP/6-31G(d) METHOD — M. R. Sohilait , H. D. Pranowo and W. Haryadi	
CHEMICAL PROFILE AND BIOLOGICAL ACTIVITY OF ESSENTIAL OILS FROM Psidium guajava GROWN IN TIMOR ISLAND- EASTERN INDONESIA — Antonius R. B. Ola , Yosefa Cysilia Bheku Dje , Agustina E Nahas , Petronela Nenotek , Theo Da Cunha , Dodi Darmakusuma , Henderiana L. L. Belli and Herianus I. D. Lalel	
SYNTHESIS AND CHARACTERIZATION OF SCHIFF BASE AND ITS TRANSITION METAL COMPLEXES DERIVED FROM 3- ETHOXSALICYLALDEHYDE AND P-TOLUIDINE — K. Sirumalar , M. Paul Johnpeter , R. Manikandan , A. P. Mary Sri Archana and A. Paulraj	
ANNEALING TEMPERATURE AND COCATALYST EFFECTS TO THE PHOTOELECTROCHEMICAL PROPERTY OF CuInS2 THIN FILM SEMICONDUCTOR — Gunawan , A. Haris , H. Widiyandari , D. S. Widodo , W. Septina and S. Ikeda	
IDENTIFICATION OF THE COMPONENTS BY LCMS/MSQTOF AND TOXICITY OF ETHANOL EXTRACTS OF Musa paradisiaca	

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DETERMINATION OF TRICLOSAN IN INDONESIAN HOUSEHOLD, PERSONAL CARE, AND COSMETIC PRODUCTS BY
ISOCRATIC REVERSED-PHASE HIGHPERFORMANCE LIQUID CHROMATOGRAPHY

— N. Rusdiana , M.S. Wibowo and R.E. Kartasasmita



Important Links

- Home
- About us
- Contact
- Archive
- Abstracted
- Announcement

- Editorial Board
- Author's Guidelines
- Subscription
- Manuscript Submission
- Current Issue

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SYNTHESIS AND CHARACTERIZATION OF SCHIFF BASE AND ITS TRANSITION METAL COMPLEXES DERIVED FROM 3-ETHOXY-SALICYLALDEHYDE AND P-TOLUIDINE

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ABSTRACT

By Micro elemental analysis, FTIR, Ultra Violet-Visible, Thermal analysis, ¹H & ¹³C NMR, ESR and Antimicrobial studies a total of four new metal complex derivatives of 2-((p-tolyliminomethyl)-6-ethoxyphenol (EST-L) with the metal ions Mn(II), Co(II), Cu(II) and Zn(II) have been synthesized and characterized quantitatively and qualitatively. It is shown through the spectral study that the geometrical, structural and octahedral geometries for Mn(II), Co(II), Cu(II) complexes and square planar for Zn(II) complex respectively. The presence of unpaired electrons in dx²-y² orbital and distortion in octahedral geometry of Cu(II) complex is confirmed by the ESR spectra. Under the biological evaluation, all the synthesized compounds were closed.

Keywords: Schiff Base, Metal Complexes, Spectral Characterization, Biological Studies.

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INTRODUCTION

In many biological aspects, the Schiff bases are a very important class of organic compounds with a wide range of applications.¹⁻² The metal complexes of Schiff bases possess extraordinary properties as catalysts in numerous biological systems, polymer dyes, antimicrobial activities, antifungal activities, antiviral and antibacterial activities, insecticides, antitumor, plant growth regulator, enzymatic and pharmaceutical fields³⁻⁷. Because of its biological relevance, several model systems including those with bidentate, tridentate, tetradentate, multidentate Schiff base ligands and their coordination complexes attract much attention. This study presents the synthesis, characterization, and biological activities of 2-((p-tolylimino)-6-ethoxyphenol (EST-L) and its transition metal complexes.

EXPERIMENTAL

Without using further purification, the chemical and solvents used are of inorganic and bio-applications grade. At room temperature, all the experiments are carried out, unless otherwise stated. All the metal (II) salts are used as chlorides.

Physical Measurements

On CHNS Perkin Elmer 2400 elemental analyzer, microanalytical data (C, H and N) is collected. From the following studies, the spectroscopic data is obtained in the range of 200-800 nm, spectra Perkin Elmer UV-Visible spectrophotometer model lambda 25, using NMR spectrometer Bruker Advance (II) (400 MHz, d₆-DMSO - solvent). ¹H and ¹³C NMR spectra of 2-((p-tolylimino)-6-ethoxyphenol (EST-L) and their complexes are recorded. On STH 6000 Perkin Elmer instrument the Thermo Gravimetric Analysis is done under an inert N₂ gas atmosphere. In dimethyl formamide, the Electron Proton Resonance spectra

HYDROGENATION OF AROMATIC NITRO COMPOUNDS TO AMINES ON NICKEL AND IRON-CONTAINING CATALYSTS

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ABSTRACT

A special place among the chemical transformations of nitro compounds is the reduction reaction allowing the production of valuable amines. In this review, the focus is on the discussion of nickel and iron-containing catalysts. Nickel is the most common catalyst for the reduction of various substances, including nitro compounds. Along with Raney nickel different nickel-based catalysts are used: nickel black, Ni/Al₂O₃, Ni/C, Ni/kieselguhr, Ni/SiO₂, Ni/ZnO, Ni/MgO, Ni-Cr₂O₃/C. Today iron-containing catalysts are successfully used in various processes (Fischer-Tropsch synthesis, Gaber-Bosch, dehydrogenation, dechlorination of organochlorine compounds) and during last years the papers devoted to the application of Fe-containing catalysts for selective catalytic reduction of nitro compounds have been published. The application of catalytic systems based on Fe and Fe_xO_y nanoparticles for implementation of the selective hydrogenation of nitro groups is a promising decision for replacing expensive catalysts prepared of Pt-group metals.

Keywords: Liquid-phase Hydrogenation, Aromatic Nitro Compounds, Aromatic Amines, Nickel, Iron.

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INTRODUCTION

A huge range of amines can be obtained from nitro compounds through the reduction reaction of nitro groups. Amines have wide application in the production of various dyes, drugs, corrosion inhibitors, stabilizers, polyurethanes, antiknock additives for gasoline and motor fuels.¹⁻³ Hydrogenation of aromatic nitro compounds is carried out in the liquid or gas phase and in either case, heterogeneous catalysis is used.⁴⁻⁸ Many hydrogenation processes go through several intermediate stages and the hydrogenation of aromatic nitro compounds is no exception. Thus, upon the reduction of nitrobenzene in the reaction mixture, a different amount of azobenzene is detected.⁸ Possibly with a lack of hydrogen on the surface of the catalyst, nitrobenzene displaces from the surface primary intermediate products - nitrosobenzene and phenylhydroxylamine, which, interacting with each other, form azobenzene. The increase in pressure increases the concentration of hydrogen on the surface of the catalyst and contributes to the complete reduction of nitrobenzene. With the further development of adverse reactions, hydrogenolysis of the organic compound may occur with the formation of undesirable degradation products. Hydrogenation of substituted nitrobenzenes proceeds by complex series-parallel schemes of chemical transformations.^{1-3,9} In some cases, inhibition of the reaction by the resulting hydrogenation products is possible.¹⁰⁻²¹