13th Joint Conference on Chemistry

7-8 September 2018
Semarang, Indonesia

Programme Booklet

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14.30-14.45	**Inor-Mat-24** Synthesis of N doped titania nanotube arrays photoanode using urea as nitrogen precursor for photoelectrocatalytic applications **Tiur Elysabeth**	**AnalChem-19** Preparation of Chitosan with Variations of Molecular Weight and Its Effect on Depolymerization of Chitosan with Hydrogen Peroxide using Conventional Technique **Matheis F.J.D.P. Tanasale**	**Org-Chem -19** Mesostructured cellular foam MCF-(9.2T-3D) silica as support for free a-amylase in liquefaction of tapioca starch **Joni Agustian**	**Inor-Mat-34** The Influence of Sol Gel Drying Temperature to Surface Agregate Structure of CTAB on Magnetite Silika as Phenol Adsorbent **Endang Sawitri**	**Inor-Mat-44** Ag2O Nanoparticle Fabrication by Vernonia amygdalina Del. Leaf Extract: Synthesis, Characterization, and Its Photocatalytic Activities **Ariffinisa Lintang Widyaningtyas**
14.45-15.00	**Inor-Mat-25** Utilization of sugarcane bagasse bottom ash a renewable silica source for the synthesis of slow release urea fertilizers **Iilis hermida**	**AnalChem-20** Synthesis of Polyeugenoxy Acetyl Thiophene Methanolate (PEATM) as A New Carrier **M. Cholid Djunaidi**	**Org-Chem -20** Multicomponent reactions under microwave irradiation in heterocyclic chemistry: New strategies for the 1,3,5-triazine ring construction **Anton Dolzhenko**	**Inor-Mat-35** The Effect Of Acid Concentration And Submersion Time On Silica Purification From Geothermal Sludge **Sumari**	**Inor-Mat-45** The X-Ray Diffraction Analysis On Effect Of Kalium Hydroxide/Fly Ash Ratio And Hydrothermal Temperature In Zeolit W Formation **Eddy Heraldy**
15.00-15.15	**Inor-Mat-26** Utilization of Oil Palm Empty Fruit Bunch in Activated Carbon-Ag/TiO2 Composite Catalysts for Photocatalytic Degradation of Formaldehyde **Dimas Nurwansyah**	**AnalChem-21** A 4-(1H-Benzo[D]Oxazole-2-yl)-2-Methoxyphenol Compound: Dual Sensor Selective for CN^- Ion Detection **Rahmawati**	**Org-Chem -21** Optimization of Transesterification Process Biodiesel from Nyamplung (Calophyllum inophyllum Linn) using Microwave with CaO Catalyst from Egg Shells **Anshori**	**Inor-Mat-36** Synthesis and Characterization of Light Weight Geopolymer Using Foaming Agent as Pore Structure Development **Ufafa Anggarini**	**Inor-Mat-46** Catalytic Cracking Of Waste Frying Oil Using Ni-Fe/ Zeolite Active Catalyst as A Source Of Renewable Energy **Aman Santoso**
15.15-15.30	**Inor-Mat-27** Innovation of Antimicrobial and self-cleaning using Ag/TiO2 Nanocomposite Coated Cotton Fabric for Footwear Application **Mustika Saraswati**	**AnalChem-22** Preparation of Cu (II) ion-imprinted based on charboxymethyl chitosan and application as adsorbent Cu(II) ion **Abu Masykur**	**Org-Chem -22** One Pot Synthesis Of Stearonitrile as Copper Corrosion Inhibitor **Noviyan Darmawan**	**Inor-Mat-37** Study of the surface property of Fe3O4/C nanoparticles produced in submerged arc discharge with ethylenediamine addition **Dielsa Eka Kuswari**	**Inor-Mat-47** Optimization of Non-Autoclaved Aerated Concrete Using Phosphogypsum of Industrial Waste based on Taguchi Method **Ndaru Candra Sukmana**

Utilization of Sugarcane Bagasse Bottom Ash A Renewable Silica Source for the Synthesis of Slow Release Urea Fertilizers

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Abstract

Slow release urea fertilizer (SRUF) need to be developed to reduce environmental pollution and to minimize loss of nutrient leaching due to the application of conventional urea fertilizer. In this study, various SRUF's with different urea release behaviours were synthesized using silica derived from sugarcane bagasse bottom ash which is solid waste of sugarcane industry. Silica was extracted from bagasse bottom ash using H_2SO_4 solution and followed by drying at 105°C and and then calcinations at 550°C. In the SRUF preparation, a certain amount of silica (9,2 – 9.8 g) was mixed with a certain amount of corn starch (0.2 - 0.8 g). Then, the mixture was added to melted urea (90 g). After that, the admixture was extruded to produce SRUF in the form of pellet and then dried at 50°C. Then, SRUF was characterized through SEM-EDX and FTIR analysis. as a comparison, conventional urea fertilizer was also characterized. Static release experiment was conducted to observe urea desorption mechanism of the SRUF. It was found that the release of urea in the SRUF was generally much slower compared conventional urea fertilizer. SRUF-4 using silica (9.2 g), corn starch (0.8) and urea (90 g) in the preparation required the longest time to completely release urea. SRUF-4 release mechanism was *non-Fickian Diffusion* (*Anomalous Transport*) with desorption rate model of $Y = 0.00665504t^{0.4757}$.

Keywords: Slow release urea fertilizer, silica, sugarcane bagasse ash, corn starch, desorption rate model