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13th Joint Conference on Chemistry

7-8 September 2018
Semarang, Indonesia

Programme Booklet

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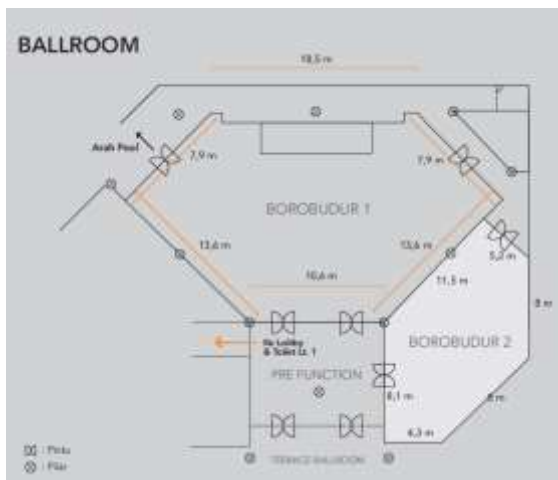
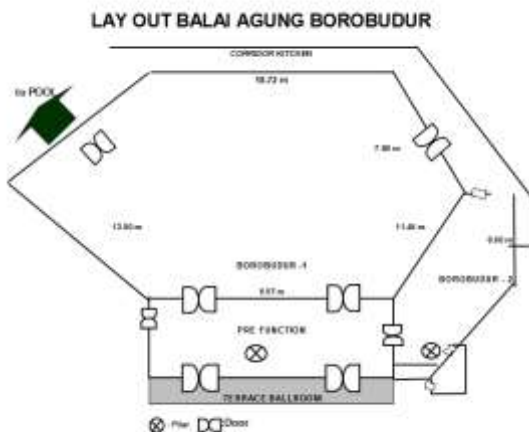
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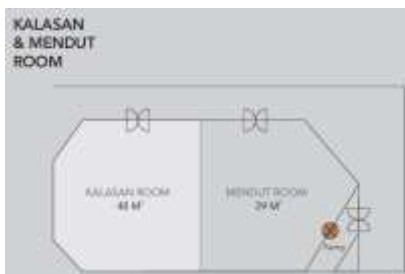
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Room Layout





Conference Programme

Friday, 12 November 2014 (Day one)

- 07.30-08.00 Registration for conference
08.00-08.20 Conference Grand Opening
08.20-09.10 Plenary Lecture 1 – Borobudur Ballroom
Dr. Simon Smart
Molten Catalysts for Hydrogen Production from Methane and CO₂ Free Iron Production
Chair: Adi Darmawan
09.10-10.00 Plenary Lecture 2 – Borobudur Ballroom
Dr. Lidija Siller
Bioinspired nanomaterials and processes: finding sustainable solutions for our planet and environment
Chair: Yayuk Astuti
10.00-10.10 Coffee break
10.10-11.00 Plenary Lecture 3 – Borobudur Ballroom
Prof. Dr. Rizwan Hasan Khan
Protein aggregation and its inhibition
Chair: Agustina L. N. Aminin
11.00-11.40 Poster session – Borobudur2
11.40-13.00 **Lunch Break**
13.00-13.50 Plenary Lecture 4 – Borobudur Ballroom
Prof. Dr. Fadzilah Adibah Abdul Majid
Evidence based Herbal Medicines: The Chemistry of Challenges and Hopes
Chair: Nor Basid A. Prasetya
13.50-15.20 Parallel session 1
15.20-15.30 Coffee Break
15.30-17.45 Parallel session 2
18.30-20.30 Conference dinner

Saturday, 8 September 2018 (Day two)

- 07.30-08.00 Registration
08.00-09.15 Parallel session 3
09.15-09.25 Coffee break
09.25-10.15 Plenary Lecture 5 – Borobudur Ballroom
Prof. Eiji Osawa
Application of 3 nm Diamond Particles
Chair: Yayuk Astuti

- 10.15-11.05 Plenary Lecture 6 – Borobudur Ballroom
Prof. Insung S. Choi
 Cell-Materials Interfaces
 Chair: Teguh Endah Saraswati
- 11.05-11.55 Plenary Lecture 7 – Borobudur Ballroom
Dr. Mehrorang Ghaedi
 Recent Advance of Nanostructure for Preconcentration of Compounds
 and Adsorption or Photodegradation of Pollutants
 Chair: Cepi Kurniawan
- 11.00-12.55 Coffee break
- 12.55-13.45 Plenary Lecture 8 – Borobudur Ballroom
Dr. Ratna Balgis
 Carbon-based nanostructured particles for catalyst application
 Chair: Uyi Sulaeman
- 13.45-16.15 Parallel session 4
- 16.15-17.00 Three minutes poster presentation
- 13.00-13.50 Closing ceremony and award announcement

Parallel Presentation Schedule

Parallel session 1: Friday, 7 September 2018 (day one), 13.50-15.20

	Biochemistry Room: Sewu Chair: Agustina L. N. Aminin	Analytical Chemistry Room: Kalasan Chair: Retno Lusiana	Physical Chemistry Room: Mendut Chair: Dwi Hudiyantri	Organic Chemistry Room: Prambanan Chair: Khairul Anam	Inorganic Material Room: Borobudur 1 Chair: Witri Wahyu Lestari
13.50-14.05	Invited Speaker Bio-01 Anthocyanin and recent development for functional food Lydia Ninan Lestario	AnalChem-01 NH and CN Radicals Emission from Corona Post Discharge Region in High Density Nitrogen Plasma Muhammad Nur	PhysChem-01 The Effect Variations of Heating Rate and Final Temperature to Calor Value and Energy Activation on Rice Husk Pyrolysis Pranoto	Invited Speaker Org-Chem-01 Metalation of Natural Dye for dye-sensitized solar cell photosensitiser Cepi Kurniawan	Invited Speaker Inor-Mat-01 Surface modification of carbon-based nanomaterial by plasma processing Teguh Endah Saraswati
14.05-14.20	Bio-02 Biosynthesis of Calcium Oxide (CaO) Catalyst Mediated by Red Dragon Fruit Peels (<i>Hylocereus polyrhizus</i>) Extract and Its Application as Antimicroorganism Inorganic Material Muliadi Ramli	AnalChem-02 Synthesis of Selective Membrane Based on Eugenol for Hemodialysis M. Cholid Djunaedi	PhysChem-02 Development of Nanofluid Detergent Based on Methyl Ester Sulfonates (MES) Surfactant from Waste Cooking Oil and Titanium Dioxide Nanoparticles Resi Levi Permadiani	Org-Chem-02 Effect of Hard Segment/Soft Segment Ratio on Thermal Characterization of Palm Oil – based Polyurethane and Poly(urethane – urea) Mohammad Masykuri	Inor-Mat-02 Synthesis and Characterization of Antibacterial Photocatalytic Nanocomposite of Activated Carbon@Titanium dioxide Employing Ultrasonic Agitation Method Pratama Jujur Wibawa
14.20-14.35	Bio-03 Saponins from Purple Eggplant (<i>Solanum melongena</i> L.) Mesocarp and The activity as Pancreatic Lipase Inhibitor Subandi	AnalChem-03 Photo-assisted Dry Reforming of Methane over Strontium Titanate Singgih Wibowo	PhysChem-03 Catalyst Screening on Diimide Transfer Hydrogenation of Natural Mochamad Chalid	Org-Chem-03 Nutritional status of <i>Spirulina</i> sp by mass cultivated Deasy Liestianty	Inor-Mat-03 Synthesis of β -TCP by Sol-Gel Method: Variation of Ca/P Molar Ratio Tri Windarti
14.35-14.50	Bio-04 Comparative Study of Acid and Enzyme Hydrolysis for The Production of Bioethanol From Rice Straw Sani Muhammad	AnalChem-04 Optimization of Conventional and Ultrasound Assisted Extraction of Inulin from Gambili (<i>Dioscorea esculenta</i> L.) Using Response Surface Methodology (RSM) Yohanes Martono	PhysChem-04 Thermodynamic Properties for Thermal Degradation of Vitamin C in Wedang Margareta Novian Cahyanti	Org-Chem-04 Phytochemical Screening and Antioxidant Activity of Hydroethanolic Extracts of <i>Ruellia tuberosa</i> L. Anna Safitri	Inor-Mat-04 Synthesis, characterization and photoluminescence analysis of complex $[(\text{dpa-dtc})_2\text{-Eu-(Dmphen)}]$ as precursor europium sulphides Muliadi

	Biochemistry Room: Sewu Chair: Agustina L. N. Aminin	Analytical Chemistry Room: Kalasan Chair: Retno Lusiana	Physical Chemistry Room: Mendut Chair: Dwi Hudiyantri	Organic Chemistry Room: Prambanan Chair: Khairul Anam	Inorganic Material Room: Borobudur 1 Chair: Witri Wahyu Lestari
14.50-15.05	Bio-05 Anti-atherosclerosis potency of Pandanus tectorius fruit rich by tranteretin and ethyl trans-cafeate, and their cytotoxicity against HepG2 cell line Yosie Andriani	AnalChem-05 Degradation of Congo Red in Batik Wastewater Using Fenton Reagent under Visible Rays Cherly Firdharini	PhysChem-05 The Phenomenon of UV-Vis spectroscopic changing due the binding of CO to The Nitric Oxide Reductase from Bacillus Azotoformans Suharti	Org-Chem-05 Transformation reaction of prenylated chalcone of pinostrobin derivative and their antibacterial activity Soerya Dewi Marliyana	Inor-Mat-05 The Synthesis of Lithium Zirconate as Solid Base Catakyst for Transesterification Reaction in The Production of Biodiesel Eko Andrijanto
15.05-15.20	Bio-06 The Influence of Dosage, Exposure Time and Contact Temperature of Ozone In Controlling Food Quality (Case Study: Tofu) Rana Rezeki Najeges	AnalChem-06 Corrosion Inhibitory Properties Of La _{0.5} Ca _{0.5} MnO ₃ -Gold Edobor-Osoh Abiola	PhysChem-06 The Influence of Chitosan Concentration on Morphology and Conductivity of Lithium Aluminium Titanate Phosphate for Solid Electrolytes of Lithium-ion Battery Application Arie Wibowo	Org-Chem-06 Extraction of Rose Oil using Solvent-Free Microwave Extraction and Application as Mosquito Repellent Heri Septya Kusuma	Inor-Mat-06 Polyethylene glycol incorporation on solid polymer electrolyte based PVDF – LiBOB Qolby Sabrina

Parallel session 2: Friday, 7 September 2018 (day one), 15.30-17.45

	Biochemistry Room: Sewu Chair: Mukhammad Asyari	Analytical Chemistry Room: Kalasan Chair: Gunawan	Organic Chemistry Room: Mendut Chair: Pratama Jujur Wibowo	Organic Chemistry Room: Prambanan Chair: Ismiyarto	Inorganic Material Room: Borobudur 1 Chair: Teguh Endah Saraswati
15.30-15.45	Bio-07 The Effect of Goat Milk Yoghurt Casein on Malondialdehyde level of Rats (<i>Rattus norvegicus</i>) exposed by 2,3,7,8-tetrachloro-dibenzo-p-dioxin Chanif Mahdi	AnalChem-07 Chiral separation of miconazole by high performance liquid chromatography and micellar electrokinetic chromatography Dadan Hermawan	Org-Mat-01 Improvements in degree of filler dispersion and tensile properties of carbon black-filled styrene-butadiene rubber composites using of alkanolamide Indra Surya	Org-Chem-07 The Utilization of Citrus Hystrix and Citrus Limon as an Organic Demulsifier Formulation Tomi Erfando	Invited Speaker Inor-Mat-07 Design of silver orthophosphate based photocatalyst for organic pollutant degradation Uyi Sulaeman

	Biochemistry Room: Sewu Chair: Mukhammad Asyari	Analytical Chemistry Room: Kalasan Chair: Gunawan	Organic Chemistry Room: Mendut Chair: Pratama Jujur Wibowo	Organic Chemistry Room: Prambanan Chair: Ismiyarto	Inorganic Material Room: Borobudur 1 Chair: Teguh Endah Saraswati
15.45-16.00	Bio-08 Hydrolysis of Tapioca Starch using Amylase Immobilised on Magnetic Mesostuctured Cellular Foam Silica (MCF-(9.2T-3D)) Joni Agustian	AnalChem-08 Assessing The Presence Of Sugars as Organic Additives In Historical Lime Mortars Built During The Spanish Colonial Period In The Philippines Jan-Michael C. Cayme	Org-Mat-02 Synthesis of hybrid latex poly(methylmethacrylate-co-butylacrylate-co-styrene) with organo-montmorillonite as filler via miniemulsion polymerization for barrier paper application Johannes Chanra	Org-Chem-08 Cationic Polymerization of Waste Palm Cooking Oil Under Microwave Irradiation Muhamad Farid	Inor-Mat-08 Effects of acidity on the mesoporous carbon CMK-3 structure during Ibuprofen molecule adsorption Maria Ulfa
16.00-16.15	Bio-09 The Immune Responds Of Balb/C Mice On Antigen Recombinant Fim-C Inclusion Bodies Salmonella Typhi Protein Emulsified With Alumina Adjuvant Muktiningsih Nurjayadi	AnalChem-09 Fluorescence Sensing of Cu ²⁺ Ions over Newly Synthesized 5-Nitroisatin Schiff Base Immobilized on SBA-15 M. Riza Ghulam Fahmi	Org-Mat-03 Mechanical and Wettability Properties of Polypropylene / Cyclic Natural Rubber Blends in the Presence of Nanocrystalline Cellulose and Maleic Grafted Adhesion Promoter I Putu Mahendra	Org-Chem-09 Fatty Acid Composition and Total Lipid Content of The Seed Oil of Leucaena leucocephala (Lam) De Wit Hartati Soetjipto	Inor-Mat-09 Synthesis and Characterization of L-Arginine-Modified Silica by Sol-Gel Method Prepared from Rice Hull Ash Sri Hastuti
16.15-16.30	Bio-10 Momordica charantia stem extract mediated biogenic synthesis of silver nanoparticles: Optical and antimicrobial efficacy Anuoluwa Abimbola Akinsiku	AnalChem-10 The Study of Composite Membrane from A Blend of Polyether Sulfone and Poly Ethylene Glycol (PEG Blended PES) Retno Ariadi Lusiana	Org-Mat-04 Cholesterol Implications In Coconut (<i>Cocos nucifera</i> L.) Liposomes Encapsulation Of Beta-Carotene And Vitamin C Dwi Hudiyantri	Org-Chem-10 Direct coupling of lactates to 4-methyl-2-ketoglutarate mediated by vanadyl terpyridine Zhaohui Zhou	Inor-Mat-10 Modified the pore size and morphology of mesoporous silica SBA-15: Influence of time hydrothermal treatment and addition of polyvinyl alcohol Ridhawati

	Biochemistry Room: Sewu Chair: Mukhammad Asyari	Analytical Chemistry Room: Kalasan Chair: Gunawan	Organic Chemistry Room: Mendut Chair: Pratama Jujur Wibowo	Organic Chemistry Room: Prambanan Chair: Ismiyarto	Inorganic Material Room: Borobudur 1 Chair: Teguh Endah Saraswati
16.30-16.45	Bio-11 In-Vitro Antibacterial, Phytochemical, Antimycobacterial Activities Of Bidens Pilosa Leaf Extract Ajanaku Kolawole Oluseyi	AnalChem-11 Removal Emission Gas COx, NOx, and SOx from Automobile by Using Non-Thermal Plasma Muhammad Nur	Org-Mat-05 Effect of Alkalinization- Acid Bleaching & Hydrolysis Treatment Stalk Sweet Sorghum Waste on Compatibilities in Polypropylene Matrix Mochamad Chalid	Org-Chem-11 Novelty Approach of Esterification Process Using Heterogeneous Catalyst in Biodiesel Synthesis from Waste Cooking Oil Ananda Santia Citra Dewi	Inor-Mat-11 Synthesis and Characterization of A site doped Lanthanum based perovskite catalyst for the oxidation of soot Kayode Akinlolu Olaolu
16.45-17.00	Bio-12 The Application of Ozonated Water to Maintain the Quality of Tuna: The Effect of Contact Time, Contact Temperature and Ozone Dosage Adlimatul Putri Ilmiyah	AnalChem-12 Corrosion Inhibitive Properties of Epimedium Grandiflorum on Mild Steel in HCl Acidic Media Aladesuyi Olanrewaju	Org-Mat-06 Study of Physical Characteristic of Rubberized Hotmix Asphalt based on Various Dosage of Natural Rubber Latex and Solid Rubber Henry Prastanto	Org-Chem-12 Natural Reagent from Secang (Caesalpinia sappan L.) Bark for Urea Biosensor Amin Fatoni	Inor-Mat-12 Nanocomposites Polyaniline (PANI)/ZnO for degradation of Congo Red Dye Roy Andreas
17.00-17.15	Bio-13 Screening of Proteolytic Bacteria from Tauco Surabaya Based on Pathogenicity and Selectivity on Collagen of Milky Fish (Chanos chanos) Scale for Healthy Collagen Evi Susanti	AnalChem-13 The Comparison of Patchouli Oil Extraction using Soxhlet and Microwave-Assisted Extraction Methods Anshori	Org-Mat-07 Blend of recycle Polypropylene/Kenaf Fiber/recycle Natural Rubber/Montmorillonite: The Effect of Natural Rubber plasticizer against Tensile Strength and Burning Rate properties of Smart Composites Neng Sri Suharty	Org-Chem-13 Nutritive Assessment Of Sorghum-Ogi Plantain Flour Weaning Food Ajanaku Kolawole Oluseyi	Inor-Mat-13 Engineering Aluminium Matrix Composite (AMC) Reinforcement Organoclay Based On Hotpress Method using Adaptive Neuro- Fuzzy Inference System (ANFIS) Yulius Eka Agung Seputra
17.15-17.30	Bio-14 Cellulase Enzyme Immobilization In Silica-Cellulose Matrix Surjani Wonorahardjo	AnalChem-14 Energy Storage System from Galvanic Cell Using Electrolyte from a plant as an Alternative Renewable Energy Gunawan	Org-Mat-08 Poly (Vinyl Alcohol) / Glutaraldehyde / Premna Oblongifolia Merr Extract Hydrogel For Controlled- Release And Water Absorption Hendrawan	Org-Chem-14 Study Chemical- Physical Properties of Turpentine Oil by Distillation Method Daryanto	Inor-Mat-14 Composite Material Consisting of Activated Natural Zeolite and HKUST- 1 (ANZ@HKUST-1) for CO ₂ Capture Witri Wahyu Lestari

	Biochemistry Room: Sewu Chair: Mukhammad Asyari	Analytical Chemistry Room: Kalasan Chair: Gunawan	Organic Chemistry Room: Mendut Chair: Pratama Jujur Wibowo	Organic Chemistry Room: Prambanan Chair: Ismiyarto	Inorganic Material Room: Borobudur 1 Chair: Teguh Endah Saraswati
17.30-17.45	Bio-15 Antibacterial Activity of Hydrolysate Protein from Etawa Goat Milk Hidrolyzed by Crude Extract Bromelin Puji Lestari	AnalChem-15 Electrosynthesis of Coordination Polymers Containing Magnesium(II) and Benzene 1,3,5-Tricarboxylate: The Influence of Solvents and Electrolytes toward the Dimensionality Tria Hikma Novita	Org-Mat-09 Influence Of The Synthesis Parameters On The Properties Of Natural Rubber Grafted Poly-3-Hydroxybutyrate Asmaa	Org-Chem-15 Application of Waste Sorghum Stem (Sorghum bicolor) as a Raw Material for Microfiber Cellulose Aniek Sri Handayani	Inor-Mat-15 The effects of Sn loading on dry reforming of biogas at Solid Oxide Fuel Cell operating conditions over Ni-YSZ catalysts Lina Troskialina

Parallel session 3: Saturday, 8 September 2018 (day two), 08.00-09.15

	Biochemistry Room: Sewu Chair: Chanif Mahdi	Computational Chemistry Room: Kalasan Chair: Parsaoran Siahaan	Organic Material Room: Mendut Chair: Mochamad Chalid	Medical Chemistry Room: Prambanan Chair: Amin Fatoni	Inorganic Material Room: Borobudur 1 Chair: Roy Andreas
08.00-08.15	Bio-16 Isolation and Characterization of Antibacterial Pigment produced by Actinomycetes K-4B from Segara Anakan Cilacap Ari Asnani	Comp-01 Ab Initio Computational Study of Reaction Mechanism of C-N Bonding Formation in Ac-DT-NH2 and Ac-TD-NH2 Peptide on HF/6-31g** Level Parsaoran Siahaan	Org-Mat-10 A microwave assisted, Fe3O4/camphor-catalyzed three-component synthesis of 2-amino-4H-chromenes and their antibacterial and antioxidant activity Dwi Febriantini	Med-01 Early Study of Crab Cuticle Membrane Application for Treatments of Corneal Laceration in Rats Raden angga kartiwa	Invited Speaker Inor-Mat-16 Effect of Urea, Citric Acid and Glycine on The Physicochemical Properties and Photocatalytic Activity of Bismuth Oxide Synthesized Using The Solution Combustion Method Yayuk Astuti
08.15-08.30	Bio-17 Determination of Browning Reaction Inhibitory Activity by Color Performance and Browning Index on Snake Fruits with Hypothiocyante Fortification Ahmad Ni'matullah Al-Baarri	Comp-02 Donor-Acceptor Properties of Anthocyanins: Which one is Better Corrosion Inhibitor? Saprizal Hadisaputra	Org-Mat-11 Preparation of monodisperse polystyrene spheres by sonication method Mukhtar Effendi	Med-02 Discovering Anticancer Compound of Ethyl Acetate Extract from RL1 Code Endophytic Fungi Culture Derived by Phyllanthus niruri Linn Leaves Through Cell Cycle Modulation in T47D Cells Yuyun Yuniati	Inor-Mat-17 Depolymerization of Liquid Epoxidized Natural Rubber (LENR) Using Metal Supported Catalyst Nur Najwa Bt Abdul Talib
08.30-18.45	Bio-18 Estrogen Level And Mucus Cervic Of Female Timor Deer (Rusa timorensis) After Supplementation Mineral Blok During Estrous Cycle Daud Samsudewa	Comp-03 Pharmacophore-Based Virtual Screening and Molecular Docking Simulation of Terpenoid Compounds as the Inhibitor of Sonic Hedgehog Protein for Colorectal Cancer Therapy Mega Maulina Ekawati	Org-Mat-12 Behaviour of Compatibility of Ap-g-PHMA on to Impact Polypropylene/Kenaf Fibers composites Aniek Sri Handayani	Med-03 Virtual Screening of Natural Products as an Inhibitor of DNA Methyltransferase 1 Enzyme for Breast Cancer Disease Ina Nur Istiqomah	Inor-Mat-18 Mechanical Properties and Electrical Conductivity of Chitosan/PVA/SWCNT Nanocomposites based Thin Film Fitri Khoerunnisa

	Biochemistry Room: Sewu Chair: Chanif Mahdi	Computational Chemistry Room: Kalasan Chair: Parsaoran Siahaan	Organic Material Room: Mendut Chair: Mochamad Chalid	Medical Chemistry Room: Prambanan Chair: Amin Fatoni	Inorganic Material Room: Borobudur 1 Chair: Roy Andreas
08.45-09.00	Bio-19 Room temperature phytosynthesis of silver nanoparticles using leaf extract of Momordica charantia: Optical and antimicrobial properties Anuoluwa Abimbola Akinsiku	Comp-04 In Silico Study: The Anticlycation Potency of Aloin on The Protein Surface of Human Serum Albumin Mukhammad Asy'ari	Org-Mat-13 Tensile and Oil Resistance Properties of Chloroprene Added in Epoxidized Natural Rubber, Nitrile Butadiene Rubber, and Poly Vinyl Chlorides Blends Tri Susanto	Med-04 Discovery of Biogenic-based Compound as Potential Heat-Shock Protein 90 Inhibitor through Fragment-based Drug Design Mochammad Arfin Fardiansyah Nasution	Inor-Mat-19 Synthesis Hydroxyapatite using Geloina Coaxans Shell and NaH ₂ PO ₄ as Precursors with Wet Method Pepi Helza Yanti
09.00-09.15	Bio-20 The amylase production and identification of bacteria by 16S rRNA Nurhayati	Comp-05 In Silico Identification of Potent Inhibitors of Heat Shock Protein 90 (Hsp90) from Indonesian Natural Product Compounds as a Novel Approach to Treat Ebola Virus Disease Mochammad Arfin Fardiansyah Nasution	Org-Mat-14 Composites of Natural Rubber, Carbon Black, and Kaolin Using Sodium Bicarbonate Content for Sponge Application Nasruddin	Med-05 Encapsulation of Vitamin C in Sesame Liposomes: Computational and Experimental Studies Dwi Hudiayanti	Inor-Mat-20 The Effect of MgO and Cr ₂ O ₃ Doping on Mullite Formation from Nigeria Sourced Kaolin - Calcined Alumina Sintered Compacts Aladesuyi Olanrewaju

Parallel session 4: Saturday, 8 September 2018 (day two), 13.45-16.15

	Inorganic Material Room: Sewu Chair: Ridhawati	Analytical Chemistry Room: Kalasan Chair: Dadan Hermawan	Organic Material Room: Mendut Chair: Mukhtar Effendi	Inorganic Material Room: Prambanan Chair: Pepi Helza Yanti	Inorganic Material Room: Borobudur 1 Chair: Ratna Balgis
13.45-14.00	Inor-Mat-21 Hydrodeoxygenation of Furfural-Acetone Condensation Adduct over Alumina-Zirconia and Silica-Zirconia supported Nickel Catalysts Siti Maryiah Ulfa	AnalChem-16 The Influence of Heparin Grafted The Candidate of Chitosan/Poly(Ethylene Glycol) Blend Membrane for Creatinin and Urea Transport Retno Ariadi Lusiana	Org-Chem-16 Characteristics, Cytotoxicity and Inhibition Xanthine Oxidase Activities of Alkaloid Extract from Avicennia marina Exudates Khairul Anam	Inor-Mat-31 Impacts of Rice Hush Ash Filler Loading on Curing, Morphological Characteristics and Tensile Properties of Natural Rubber/Butyl Rubber Blends Rahmaniar	Inor-Mat-41 Synthesis and characterization of CoMo/mordenite catalyst for hydrotreatment of lignin compound models Khoirina Dwi Nugrahaningtyas

	Inorganic Material Room: Sewu Chair: Ridhawati	Analytical Chemistry Room: Kalasan Chair: Dadan Hermawan	Organic Material Room: Mendut Chair: Mukhtar Effendi	Inorganic Material Room: Prambanan Chair: Pepi Helza Yanti	Inorganic Material Room: Borobudur 1 Chair: Ratna Balgis
14.00-14.15	Inor-Mat-22 Synthesis and Characterization of Cu (II) and Co (II) Encapsulated Metal Complexes in Zeolite-Y for the Oxidation of Phenol and Benzene Kayode Akinlolu Olaolu	AnalChem-17 Sodium alginate film: The effect of crosslinker on physical and mechanical properties Khairul Anuar Mat Amin	Org-Chem-17 Effect of Drying Treatments on the Contents of Lutein and Zeaxanthin in Orange- and Yellow-Varieties of Marigold Flower and Its Application to Encapsulated Lutein Jovine Marcella Kurniawan	Inor-Mat-32 The Enhanced Catalytic Activities of Octahedral Layer Birnessite-type Manganese Oxide Synthesized via Precipitation Method for the Degradation of Methylene Blue Amir Awaluddin	Inor-Mat-42 Activated Carbon Mask to Preventive Cigarette Smoke with Ekstract Sansevieria sp. Septin Dwi Anggraini
14.15-14.30	Inor-Mat-23 Effects of sintering on the mechanics properties of hydroxyapatite from fish bone (<i>Pangasius hypophthalmus</i>) Poedji Loekitowati Hariani	AnalChem-18 The Blend Effect of CMC to Chitosan Membrane for the Transport of Urea Khabibi	Org-Chem -18 Increasing Yield of Essential Oil from Citronella Grass (<i>Cymbopogon nardus</i>) using Microwave-Assisted Distillation Willy Tirza Eden	Inor-Mat-33 Surface Modification of Sodium-Montmorillonite (Na ⁺ -MMT) by the use of Organic Cations through Conventional Ion Exchange Method Johannes Chanra	Inor-Mat-43 Catalytic Activity of P2O5-natural zeolite on Hydration Reaction of Turpentine into α -Terpineol Nanik Wijayati
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 α -amylase in liquefaction of tapioca starch Joni Agustian	Inor-Mat-34 The Influence of Sol Gel Drying Temperature to Surface Aggregate 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 as a renewable silica source for the synthesis of slow release urea fertilizers Ilis hermidia	AnalChem-20 Synthesis of Poly(eugenoxo 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 Heraldly

	Inorganic Material Room: Sewu Chair: Ridhawati	Analytical Chemistry Room: Kalasan Chair: Dadan Hermawan	Organic Material Room: Mendut Chair: Mukhtar Effendi	Inorganic Material Room: Prambanan Chair: Pepi Helza Yanti	Inorganic Material Room: Borobudur 1 Chair: Ratna Balgis
15.00-15.15	Inor-Mat-26 Utilization of Oil Palm Empty Fruit Bunch in Activated Carbon-Ag/TiO ₂ 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 The Effect of Pb Immobilization on Compressive Strength of Fly Ash Based Geopolymer 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/TiO ₂ 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 Fe ₃ O ₄ /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
15.30-15.45	Inor-Mat-28 Synthesis and Characterizations of nZVI-AC Composites from Coconut Shells and Its Application for the Adsorption of Pb (II) and Cr (VI) Ions Eka Sri Yusmartini	AnalChem-23 Study of Carbon Nanodots (C-Dots) from Water Hyacinth (<i>Eichornia crassipes</i>) to Degrade Textiles Dyes Anggi Regiana Agustin	Org-Chem -23 Synthesis Of Halal Membrane Capsule Shell From Water Soluble Chitosan By Adding Sodium Lauryl Ether Sulfate Herlina Krise Tiany	Inor-Mat-38 The Effect Of Pani-Doped Perchloric Acid To Enhance Lithium Iron Phosphate Conductivity Iman Rahayu	Inor-Mat-48 Ag/ZnO photocatalyst for photodegradation of methylene blue Ni Putu Diantariani
15.45-16.00	Inor-Mat-29 Synthesis, Morphological, Optical Properties Of Functionalized La _{0.33} Ca _{0.67} MnO ₃ For Antibacterial Therapy Edobor-Osoh Abiola	AnalChem-24 Purification of Waste Cooking Oil as a Raw Materials for Biosurfactan Elyna Wahyu Trisnawati	Org-Chem -24 Synthesis and Characterization of Composite Gels Starch-Graft-Acrylic Acid/Bentonite (St-g-AA/B) Using N,N-Methylenebisacrylamide Trias Ayu Laksanawati	Inor-Mat-39 Photocatalytic Degradation of Indigo Carmine Dye using Fe-2O ₃ /Bentonite Nanoparticle composite Prepared by Mechanochemical Synthesis Surya Lubis	Inor-Mat-49 Synthesis And Catalytic Evaluation Of Hematite (?-Fe ₂ O ₃) Magnetic Nanoparticles From Iron Sand For Waste Cooking Oil Conversion To Produce Biodiesel Through Esterification- Transesterification Method Widayat

	Inorganic Material Room: Sewu Chair: Ridhawati	Analytical Chemistry Room: Kalasan Chair: Dadan Hermawan	Organic Material Room: Mendut Chair: Mukhtar Effendi	Inorganic Material Room: Prambanan Chair: Pepi Helza Yanti	Inorganic Material Room: Borobudur 1 Chair: Ratna Balgis
16.00-16.15	Inor-Mat-30 Sol-Gel Synthesis Of Barium Ferrite And Their Catalytic Application In Methyl Ester Synthesis Nur Izzana Binti Sulaiman	AnalChem-25 The Effect of Dyes and Electrolytes and Its Performance in Dye-Sensitized Solar Cells (DSSCs) Edi Wahyu Sri Mulyono	Org-Chem-25 Synthesis 3-(3-(4-Hydroxy-3-methylphenyl) acryloyl) Cumarin and Its Antibacterial Potential Against <i>Escherichia coli</i> and <i>Staphylococcus aureus</i> Fida Hidayatul Rafi'ah	Inor-Mat-40 Catalytic Transformation of 1,8-Cineole to p-Cymene with Fe ³⁺ -Natural Zeolite and Fe ³⁺ -Zeolite beta Edy Cahyono	Inor-Mat-50 Synthesis of Magnetite Silica-Cetyltrimethylammonium for Adsorbent for phenol degradation Choiril Azmiyawati

Presentation Guidelines

Oral Presentation

Presentations are held in panels with various presenters per session. Each speaker will be given 15 minutes for oral presentation using Microsoft Power Point (including Q & A session). Your slide will be projected with a projector on to a screen. It is not possible to use your own computer for your own presentation. Each speaker is responsible for the content of their presentation.

Poster Presentation

All Poster should be printed in A1 size, portrait layout. The posters will be displayed during the conference day and should be mounted by the presenter at 08:00 am. Author should stand by in the poster area during the poster session.

Three-Minute Poster Presentation

Some of the best poster based on audience vote will be asked to present their poster and its significance in a 3-minute poster presentation. The 3-minute poster presentation follows this format: presentations are limited to three minutes and can be supported only by one single static slide (no slide transitions, animations, video or sound files). Specific details will be given to participants.

Gresik, 16 Agustus 2022

Nomor : 787/KI.05/03-01/08.22
Lampiran : -
Perihal : **Klarifikasi**

Kepada Yth.
Kepala LLDIKTI Wilayah VII
Di Tempat

Dengan hormat,
Sehubungan dengan pengajuan Jabatan Akademik Dosen (JAKAD) Universitas Internasional Semen Indonesia pada dosen berikut :

Nama : Ufafa Anggarini, S.Si., M.Si.
NIDN : 0719038901
Program Studi : Teknik Kimia
Jabatan yang diajukan : Lektor 300

Maka dengan ini kami sampaikan bahwa pengajuan JAKAD dosen tersebut terdapat catatan revisi bahwa sertifikat atas nama dosen tersebut di atas pada karya ilmiah berupa prosiding diminta untuk disertakan. Akan tetapi, dosen tersebut tidak mendapat sertifikat disebabkan bukan sebagai penulis pertama ataupun sebagai presenter pada judul karya ilmiah berikut :

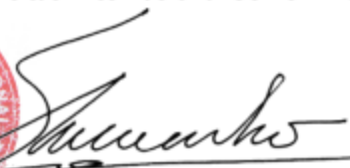
1. Optimization of non-autoclaved aerated concrete using phosphogypsum of industrial waste based on the taguchi method
2. The potential use of volcanic deposits for geopolymer materials
3. The Effect of Activated Carbon Addition on Woody Cutting Waste Briquette Combustion Quality

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Demikian surat permohonan ini dibuat untuk digunakan sebagaimana mestinya. Atas perhatian dan kerjasama yang diberikan, kami sampaikan terima kasih.

Hormat kami,
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Prof. Dr. Ing. Herman Sasongko
Rektor

Optimization of Non-Autoclaved Aerated Concrete Using Phosphogypsum of Industrial Waste based on Taguchi Method

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Abstract

Phosphogypsum as industrial waste from phosphoric acid production has great potential as a material of concrete. Optimum composition of gypsum content can increase the compressive strength and setting time of concrete, so it is suitable for material of non-autoclaved aerated concrete. The experimental design of non-autoclaved aerated concrete manufacture in this study using the Taguchi method. Characteristics of the Taguchi method used is Higher is Better, with controlled factors including the composition of portland cement, phosphogypsum and quicklime. ANOVA test results stated that cement, phosphogypsum and quicklime have a significant effect on the compressive strength of non-autoclaved aerated concrete. The results showed that the optimum composition of lightweight concrete was portland cement by 34%, phosphogypsum by 35% and quicklime by 10% to obtain an optimum compressive strength value of 20.93 kg/cm² with a density of 806 kg/m³. The use of phosphogypsum in the manufacture of non-autoclaved aerated concrete can be a solution to reduce the amount of untreated industrial waste.

M1

-45.34

-45.46

-45.59

M2

-46.99

-47.05

-47.11

-47.18

-47.24

-47.30

A (t)
-45.47B (dq)
-47.14

13th Joint Conference on Chemistry

M3

<https://jcc.undip.ac.id/>

-48.01

-48.06

-48.11

-48.16

-48.21

-48.26

-48.31



1.00

14.20

-45.3 -45.4 -45.5 -45.6

-46.9 -47.0 -47.1 -47.2 -47.3 -47.4

f1 (ppm)

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Optimization of non-autoclaved aerated concrete using phosphogypsum of industrial waste based on the taguchi method

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Abstract. Phosphogypsum as industrial waste from phosphoric acid production has great potential as a material of added materials of concrete. Optimum composition of gypsum content can increase the compressive strength and setting time of concrete, so it is suitable for use as a non-autoclaved aerated concrete. The experimental design of non-autoclaved aerated concrete manufacture in this study using the Taguchi method. Characteristic of the Taguchi method used is Higher is Better, with controlled factors including the composition of Portland cement, phosphogypsum, and quicklime. ANOVA test results stated that portland cement, phosphogypsum, and quicklime have a significant effect on the compressive strength of non-autoclaved aerated concrete. The results showed that the optimum composition of lightweight concrete was portland cement by 34%, phosphogypsum by 35% and quicklime by 10% to obtain an optimum compressive strength value of 20.93 kg/cm² with a density of 806 kg/m³. The use of phosphogypsum in the manufacture of non-autoclaved aerated concrete can be a solution to reduce the amount of untreated industrial waste.

Keywords: phosphogypsum, non-autoclaved aerated concrete, Taguchi method

1. Introduction

Lightweight concrete needs increase as urban buildings are built higher and thus require lightweight materials. In addition, lightweight concrete is more economical, easier on transportation and enhances seismic capability [1]. Aerated concrete is a lightweight concrete type with several advantages such as low density, lower thermal conductivity and good on sound absorption. Pores of lightweight concrete formed up to 80% due to the reaction of aluminium with lime so as to produce hydrogen gas and form air bubbles that are distributed to all parts of the concrete [2]. Non-autoclaved aerated concrete compared to autoclaved aerated concrete is easier in manufacturing because it does not require high pressure to reduce production costs [3].

Phosphogypsum is a chemical as a by-product of phosphoric acid fertilizer production. The amount of by-products is quite large because every a ton of phosphoric acid will produce a 4.5 tons phosphogypsum [4]. Phosphogypsum consists of calcium sulphate dihydrate and impurities in the form of phosphate, fluorides, sulphates and organic materials. About 15 % of phosphogypsum are recycled as building materials, cement retarders and others [5]. The use of phosphogypsum as a building material has limitations due to impurities such as P₂O₅, fluorides and alkalines [6]



Phosphogypsum has been used in the manufacture of hollow blocks [6], self-level mortar [7] and concrete [8]. Yang *et al.* [5] state that phosphogypsum can be used as a raw material of non-autoclaved aerated concrete, phosphogypsum acts as both an activator and a filler. In addition to phosphogypsum, fly ash [3] and quicklime [5] can also increase the compressive strength of non-autoclaved aerated concrete. So these materials have great potential in making lightweight concrete

The optimum composition of Portland cement, phosphogypsum, and quicklime on the manufacture of non-autoclaved aerated concrete determined to obtain the maximum compressive strength of concrete. Traditional experimental designs are too complex and the number of experiments will be more and more along with the many parameters being studied [9]. In this study using the Taguchi method, that makes it possible to obtain optimal conditions with a fewer number of experiments [10]. The Taguchi method is a effective method to design optimization for quality [11], which is used to find optimal compositions of non-autoclaved aerated concrete from phosphogypsum. The Taguchi method improve the quality of product by optimize the performance characteristics through the setting of design parameters and reduce the sensitivity of the system performance to source of variation [11].

2. Experimental Procedure

2.1. Materials and Methods

The materials used in this study consist of Semen Gresik Portland Cement, phosphogypsum waste from by-products of phosphoric acid production of the local company, fly ash, quicklime, sodium sulphate, sodium silicate, and aluminium powder. The composition of phosphogypsum which determined by X-ray fluorescence shown in Table 1. Non-autoclaved Aerated concrete is made by mixing dry materials (Portland cement, phosphogypsum, fly ash and quicklime) for 1 minute. After stirring the dry material, add water, sodium sulphate, and sodium silicate into the dough and stir for 1 minute until all the ingredients become homogeneous. The aluminium powder as a foaming agent is added to the dough and stir for 30 seconds then mould. Non-autoclaved aerated concrete is removed from the mould after 5 hours. Concrete steam for 12 hours with $\pm 80^{\circ}\text{C}$ temperature and lightweight concrete cured for 28 days.

Table 1. Composition of Phosphogypsum.

Compound	Si	S	Ca	Ti	Mn	Fe	Ni	Cu	Zn	Sr	Mo	Ba	Re
Concentration Unit (%)	1.2	14.9	72.3	0.22	0.075	0.50	2.70	0.33	0.09	1.4	5.7	0.3	0.2

2.2. Design Experiment

The Taguchi method is used to determine the combination of optimum factors with a small amount of experimentation. In this study selected three controlled factors namely composition of Portland cement, phosphogypsum and quicklime each with three levels to obtain the optimum compressive strength as shown in Table 2

Table 2. Controlled and Uncontrolled Factor.

Level	Controlled Factor			Uncontrolled Factor		
	Portland Cement (%)	Phosphogypsum (%)	Quicklime (%)	Sodium Sulphate (%)	Sodium Silicate (%)	Aluminium Powder (%)
1	26	35	8			
2	30	40	10	1.6	5	0.074
3	34	45	12			

Based on the Taguchi method, experiments with 3 factors and 3 levels must be done with 9 combinations of factors and levels. The combination is shown on the Orthogonal Array in Table 3. The

analysis of the effect of the factors on the compressive strength of lightweight concrete is done with ANOVA, while the optimum combination is determined by Signal to Noise Ratio (SNR) with characteristic higher is better, which calculate by equation 1. SNR is tool in Taguchi method to find best level for each composition or factor so as to maximize SNR [12].

$$SNR = -10 \log_{10} \left[\frac{1}{n} \sum_{i=1}^n \frac{1}{y_i^2} \right] \quad (1)$$

Table 3. Orthogonal Array

Run	Controlled Factor		
	Portland Cement (%)	Phosphogypsum (%)	Quicklime (%)
1	26	35	8
2	26	40	10
3	26	45	12
4	30	35	10
5	30	40	12
6	30	45	8
7	34	35	12
8	34	40	8
9	34	45	10

3. Results and Discussion

The non-autoclaved aerated concrete was prepared according to the composition specified on the orthogonal array with 4 replicates every run. The results of the compressive strength test are shown in Table 4.

Table 4. Compressive Strength of Concrete

Run	Compressive Strength (kg/cm ²)				Average of Compressive Strength (kg/cm ²)
	1	2	3	4	
1	10	10.8	8.8	11.6	10.3
2	9.2	10	8.4	11.6	9.8
3	11.2	11.2	10.8	10.4	10.9
4	15.2	13.6	17.2	16.4	15.6
5	10	9.2	11.2	13.2	10.9
6	9.6	8	9.2	9.6	9.1
7	11.6	18.4	12.4	14.8	14.3
8	14	12.4	14.4	14.8	13.9
9	11.6	14.4	10	14.4	12.6
Average					11.9

ANOVA test in this research is done to know the influence on each factor to the compressive strength of non-autoclaved aerated concrete. The initial hypothesis on ANOVA test calculation is given as follows:

- H0: $\tau_1 = \tau_2 = 0$ (factor has no significant effect on compressive strength of non-autoclaved aerated concrete)
 - H1: $\tau_1 \neq 0$ (factor has significant affecting on compressive strength of non-autoclaved aerated concrete)
- H0 will be rejected if the value of F-Value > F table.

Table 5. Analysis of variance

Source	DF	Adj SS	Adj MS	F-Value	F-Table
Portland Cement (A)	2	64.107	32.053	21.84	3.28
Phosphogypsum (B)	2	41.387	20.693	14.10	3.28
Quicklime (C)	2	14.907	7.453	5.08	3.28
Error	29	42.560	1.4676		
Total	35	162.960			

Table 5 shows that the Portland cement, phosphogypsum, and quicklime factors have F-Value > F-Table so that H0 is rejected and it can be said that all controlled factors have a significant effect on the compressive strength of lightweight concrete. The compressive strength of concrete increases with the increase of Portland cement content in concrete, this is because a large amount of cement will encourage the formation of more bonds gel [13, 14].

The composition of phosphogypsum has a significant effect on the compressive strength of lightweight concrete. Compressive strength of concrete with age of 28 days decreased along with an increasing amount of phosphogypsum [15, 16]. Phosphogypsum acts as a filling material in concrete and only a few phosphogypsum follow in the hydration reaction [17].

The composition of quicklime has a significant effect on compressive strength, the addition of lime content increases the compressive strength and density of lightweight concrete as it produces a solid structure. Tian *et al.* [17] in his research revealed that compressive strength can increase 408% with the addition of a percentage of quicklime.

The optimum composition is obtained by calculating SNR with equation 1, the SNR value of each run is shown in Fig. 1. SNR gives the parameter level combination with minimum standard deviation while keeping the mean on target [18]. Level 3 of Portland cement factor has the highest SNR value 22.67, it shows the optimum composition of Portland cement is at level 3 in 34%. The highest SNR of phosphogypsum factor is 22.43 in level 1, which means the optimum composition phosphogypsum is at level 1 in 35%. Finally, the factor of quicklime has the highest SNR of 21.90 in level 2, which means the optimum quicklime is at level 2 in 10%.

The average compressive strength at each factor and level in Fig. 2 show that the optimum Portland cement in level 3 can produce 13.6 kg/cm² concrete. The phosphogypsum in level 1 can produce a compressive strength of 13.4 kg/cm², and quicklime of 12.67 kg/cm² 3 in level 2. Average compressive strength value is used to predict the compressive strength generated by the optimum composition, using the formula in equation 2.

$$\begin{aligned}
 \text{compressive strength prediction} &= A\bar{3} + B\bar{1} + C\bar{2} - 2(\text{Average}) \\
 &= 13.60 + 13.40 + 12.67 - (2 \times 11.93) \\
 &= 15.99 \text{ kg/cm}^2
 \end{aligned}
 \tag{2}$$

The above formula calculation results show that the prediction of the compressive strength of non-autoclaved aerated concrete with combination of optimum factor level is 15.99 kg/cm².

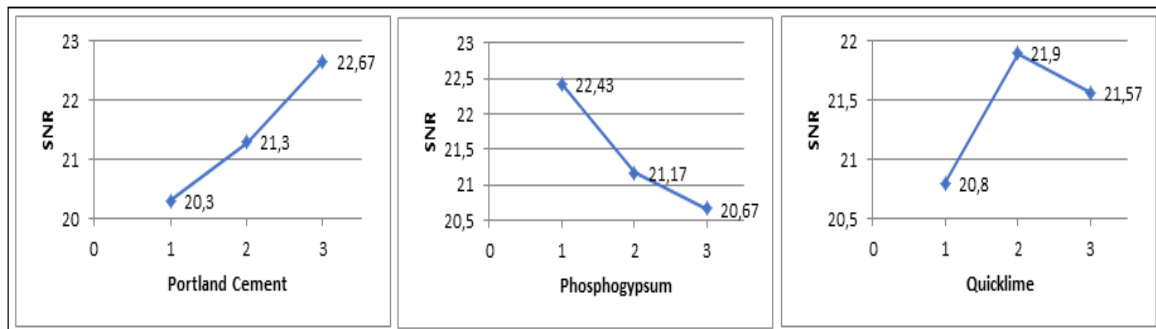


Figure 1. SNR value of each factor and level.

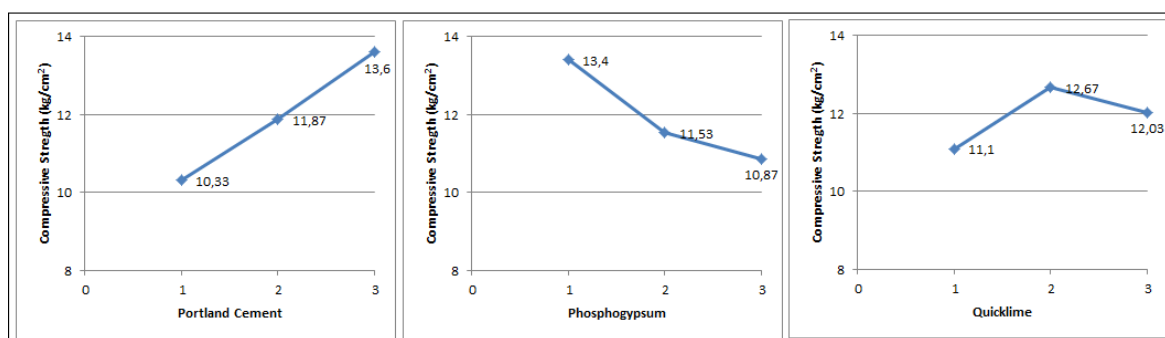


Figure 2. The average compressive strength of each factor and level.

The optimum composition is not on the orthogonal array, so the non-autoclaved aerated concrete is made according to the optimum composition obtained from SNR calculation. The result of compressive strength on 3 replication of concrete showed in Table 6 so that the average compressive strength is 20,93 kg/cm². The average yield of compressive strength is greater than the predicted value of 15.99 kg/cm². The density of non-autoclaved aerated concrete on optimum composition is 806 kg/m³ complies with lightweight concrete.

Table 6. Compressive Strength of Optimum Run.

Run	Controlled Factor			Compressive Strength (kg/cm ²)			Average Compressive Strength (kg/cm ²)
	Portland Cement (%)	Phosphogypsum (%)	Quicklime (%)	1	2	3	
Optimum Run	34	35	10	20	22.8	20	20.93

Optimum concrete with compressive strength value of 20.93 kg/cm² and the 806 kg/m³ density in this study has entered the standard including ASTM C1386-07 AAC lightweight concrete with strength class II category where the minimum compressive strength value is 20 kg/cm². Lightweight concrete with that compressive strength values according to Neville and Brooks [19] can be used as lightweight insulating concrete.

4. Conclusions

Based on the result of the research, the conclusions are the Portland cement, phosphogypsum, and quicklime have a significant effect on the compressive strength of non-autoclaved aerated concrete. The

optimum composition of non-autoclaved aerated concrete in this study was Portland cement by 34%, phosphogypsum by 35% and quicklime by 10%. The compressive strength of the optimum composition non-autoclaved aerated concrete was 20.93 kg/cm² and density of 806 kg/m³.

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