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# PROPOSAL PENELITIAN UNGGULAN
# DANA HIBAH RKAT FAKULTAS TEKNIK UNDIP
# TAHUN ANGGARAN 2021

# THE MECHANICAL PROPERTIES OF MORTAR WITH PYROLYSIS PROCESSED ASPHALT RECLAIMED PAVING


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**PROPOSAL PENELITIAN STRATEGIS**

Judul Penelitian : The Mechanical Properties Of Mortar With Pyrolysis Processed Asphalt Reclaimed Paving

Luaran Penelitian : Publikasi di Jumal Terindeks ***Scopus/*** *Clarivate Analytics*

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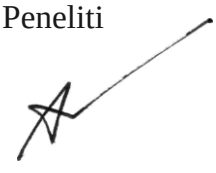

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## RESUME (ABSTRAK)

The problem of Reclaimed Asphalt Pavement (RAP) waste material is not widely used for concrete, the problem with the asphalt layer that is still attached to the aggregate, the solution approach is to remove the asphalt layer on the RAP aggregate, because the problem of cement bonding with RAP does not bind perfectly when hydration occurs, until the quality of the concrete is not optimal. The urgency of this research is that it is necessary to carry out the pyrolysis method on RAP for the utilization of concrete mortar. So that treatment can be carried out in the future, the government makes maximum use of the RAP in concrete construction work. The research proposed using laboratory experimental methods with the aim of the research is to find the characteristics of pyrolysis RAP in concrete mortar and to find new material findings using the RAP pyrolysis method for concrete construction. The long-term objective of this research is the use of RAP in the broader field of civil construction. The specific target to be achieved is the exploration of waste material into economically valuable and efficient materials. The advantage of this research is to obtain a pyrolysis method that can produce renewable energy in the form of hydrocarbon gas and bio-asphalt oil. Meanwhile, RAP pyrolysis solid material can be used in concrete mortar. The novelty of this research is the discovery of a pyrolysis method to treat RAP to be reused in concrete construction. The research method used is descriptive exploratory and laboratory experiments. The first year research was carried out on the microstructure study of RAP pyrolysis with experimental beginning with the RAP furnace to identify the carbon present in the RAP and material characteristics, both morphology, functional groups, crystals, and the chemical elements formed. The second year research was carried out by testing the mechanical properties of RAP and RAP pyrolysis by testing the mechanical properties of RAP mortar such as compressive strength, tensile strength, and absorption. The research output target is a reputable international journal. Mandatory publication plan with the title of the article "Microstructure Reclaimed Asphalt Pavement with pyrolysis".

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## RESUME

The problem of Reclaimed Asphalt Pavement (RAP) waste material is not widely used for concrete, the problem with the asphalt layer that is still attached to the aggregate, the solution approach is to remove the asphalt layer on the RAP aggregate, because the problem of cement bonding with RAP does not bind perfectly when hydration occurs, until the quality of the concrete is not optimal. The urgency of this research is that it is necessary to carry out the pyrolysis method on RAP for the utilization of concrete mortar. So that treatment can be carried out in the future, the government makes maximum use of the RAP in concrete construction work. The research proposed using laboratory experimental methods with the aim of the research is to find the characteristics of pyrolysis RAP in concrete mortar and to find new material findings using the RAP pyrolysis method for concrete construction. The long-term objective of this research is the use of RAP in the broader field of civil construction. The specific target to be achieved is the exploration of waste material into economically valuable and efficient materials. The advantage of this research is to obtain a pyrolysis method that can produce renewable energy in the form of hydrocarbon gas and bio-asphalt oil. Meanwhile, RAP pyrolysis solid material can be used in concrete mortar. The novelty of this research is the discovery of a pyrolysis method to treat RAP to be reused in concrete construction. The research method used is descriptive exploratory and laboratory experiments. The first year research was carried out on the microstructure study of RAP pyrolysis with experimental beginning with the RAP furnace to identify the carbon present in the RAP and material characteristics, both morphology, functional groups, crystals, and the chemical elements formed. The second year research was carried out by testing the mechanical properties of RAP and RAP pyrolysis by testing the mechanical properties of RAP mortar such as compressive strength, tensile strength, and absorption. The research output target is a reputable international journal. Mandatory publication plan with the title of the article "Microstructure Reclaimed Asphalt Pavement with pyrolysis".

# CHAPTER 1
# INTRODUCTION

Reclaimed Asphalt Pavement (RAP) is conventionally as a road shoulder pile, a road foundation pile, a sidewalk pile and a road patch filling (Budianto, 2009). The reuse of RAP into flexible pavement through mixing with liquid asphalt at various concentrations has also been carried out by (Dinis-Almeida et al., 2016; Handayani, 2016; Harahab, S. Soemitro, R.A.A, Budianto, 2016; Herawati et al., 2011; Lu, D.X., Saleh, 2016; Pradyumna, T; Mittal, Abhishek, Jain, 2013). The use of RAP provides benefits for balance and environmental sustainability (Widger, A., Skilnick, F., Zabolotnii, 2012) so that it has the potential to partially or completely replace natural aggregate or asphalt. Thus it can provide savings in work budget costs, inhibit natural damage due to mining excavation. C (Budianto, 2009). Problems in the use of natural aggregates and asphalt, can produce air pollution and large energy consumption to process it, both transportation of materials from mining to processing and from processing to construction work sites (Schiavi, I., 2007), as well as petroleum and minerals are non-renewable and may be depleted (TMS, 2009).

The research problem to be studied also refers to (Mary et al., 2019) who concluded that the physical and mechanical properties of RAP aggregates have slightly lower compressive strength values than natural aggregates. A good RAP is a large size of fine aggregate. It possible because of the grinding and conglomeration process of RAP aggregates coated with asphalt. An analysis of the compressive strength of an inclusive RAP concrete has been made, that the strength of the specimen decreases with an increase in the RAP aggregate, this is due to the weak bond between the asphalt film around the RAP aggregate and the cement paste. Qiang (Qiang et al., 2011) reported that emulsion asphalt cement delayed the hydration of the cement and the asphalt membrane negatively impacted the hydration of the cement. So that if RAP content is added, it can reduce the compressive strength, tensile strength and split strength of the concrete (Abraham & Ransinchung, 2018). The general objectives of the study were to find the chemical characteristics of RAP waste, to find the mechanical properties of concrete mortar by using solids from RAP waste pyrolysis and to find pyrolysis by products from RAP waste. The strategic benefit for advanced material infrastructure in Indonesia is to provide input for the government to reuse RAP waste for facilities and infrastructure as well as its resources maximally for more

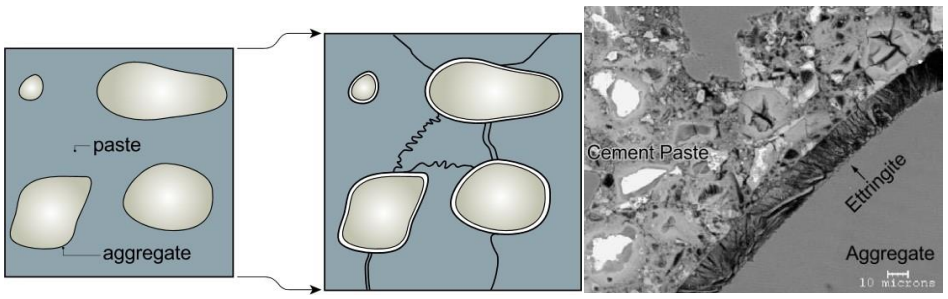
equitable regional development. Main specifications related to this research scheme are basic research that will produce the basic principles of pyrolysis technology for RAP material recycling engineering for the nation's infrastructure development and contribute to the development of advanced material structure science in civil engineering and chemical engineering. This research was conducted descriptively and experimentally in the laboratory. The idea of this research is based on the leading fields which include the strategic plan for research at the University of Diponegoro and is included in the National Research Master Plan on advanced materials. This is a collaborative research between researchers from Civil Engineering on material structures and Chemical Engineering on chemical microstructure analysis and two research members as doctoral and postgraduate students of the Department of Civil Engineering, Diponegoro University. Technology Readiness Level (TKT) at level 3, which is basic research where the materials and technology component tools used have been validated in a laboratory environment. The target of the research output is scientific publications in reputable international journals. Product description that can be directly utilized from the results of this study is the reuse of post-pyrolysis RAP aggregate material as concrete raw material.

# CHAPTER 2
# LITERATURE REVIEW

## 2.1 Hydration of Cement

The chemical reaction occurs due to the hydration of cement in a concrete mixture that has a cement hydration process including the following phases: C3S, C2S, C3A and C4AF where the hydration process takes place slowly (Stoichiometrically) to form hydration products in the form of calcium silicates (CSH), aluminates, ferrites and calcium hydroxides (CH) as by-products. The presence of pozolan in cement causes a pozolanic reaction between pozolan and calcium hydroxides, where in this process the bonds between material particles occur (Indrawati, V. and Manaf, 2011) Cracks due to chemical reactions in the mixture, known as autogenous shrinkage, and when the mixture dries. after compaction where the material changes in volume or shrinks, causing cracks known as drying shrinkage (Joice, 2015).

When portland cement is dispersed in water, calcium sulfate and high temperature calcium compounds begin to enter the solution, and the liquid phase becomes saturated quickly with various ionic types. As a result of the interaction between calcium, sulfate, aluminate, and hydroxyl ions within minutes of cement hydration, the needle-shaped crystals of hydrated calcium trisulfoaluminate, which first emerged were called ettringite. Several hours later, large prismatic calcium hydroxide crystals and very small fibrous by water and dissolve the cement particles (Mehta and Monteiro, 2002) shown in Figure 2.1.




(a) (b)

Figure 2.1 (a) Illustration diagram of mortar expansion caused by Delayed Ettringite Formation (DEF); (b) SEM on mortar pieces due to DEF (Mehta and Monteiro, 2002)

## 2.2 *Reclaimed Asphalt Pavement* (RAP)

Previous research related to pavement asphalt around the world which is the state of the art can be illustrated in Figure 2.2, which uses the Vosviewer software tool that reads RAP research throughout the Scopus database, so that the opportunity to find GAP RAP research is little done by some parties.

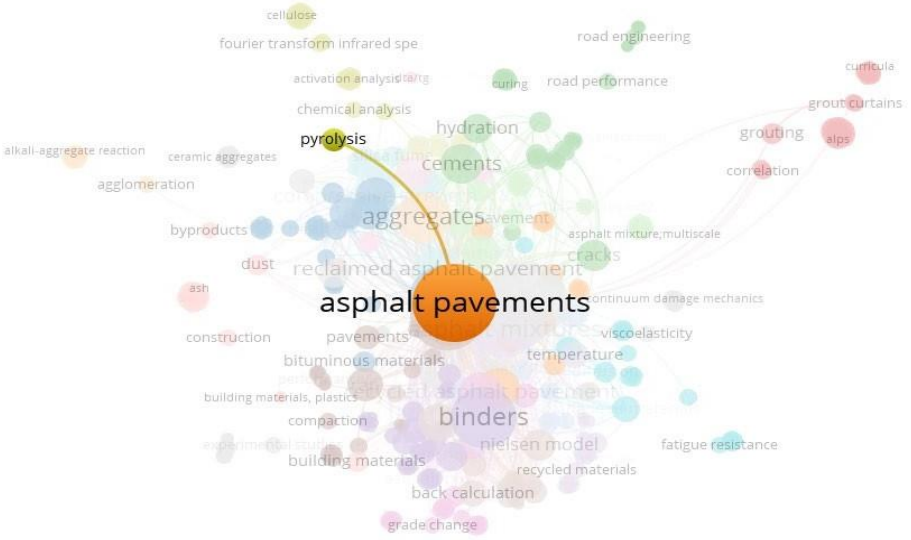



Figure 2.2 GAP research on Reclaimed Asphalt Pavement

Researchers have been working on RAP-mortars showing much lower compressive strength, tensile strength, and Young's Modulus compared to normal mortars. The percentage reduction in strength is exceeded by 50%, while the Young's Modulus is reduced by almost 70%. The addition of good RAP will significantly change the heat rate of cement hydration based on the calorimetric curve. This shows that the interactions between asphalt and most cements are physical and chemical in nature. (Institute, 1983; N. Shi & Su, 2019), (N. Shi, 2019). The durability of RAP when mixed with natural gravel and mixed with Portland cement where gravel as a substitute serves to increase the compactability and durability of RAP is stable (Chaidachatorn et al., 2019; Suddeepong et al., 2018).

## 2.3 Microstructure RAP

Microstructure studies show that RAP mortar has a larger number of air cavities than normal mortar. The high air content and cohesive failure of the RAP asphalt layer are the main reasons for the decrease in strength (X. Shi et al., 2020) (X. Shi et al., 2020). In previous studies such as (Pradyumna, T; Mittal, Abhishek, Jain, 2013; Tabaković, 2010; Taha, R; Al-

Harthy, A., Al-Shamsi, K., and Al-Zubeidi, 2002) have divided test classifications physical and mechanical properties of rough and fine RAP on the properties of specific gravity, water absorption, specific gravity, destruction value, impact value, wear value recapitulated in Table 2.1

Table 2.1 Physical and mechanical properties of the RAP

| No | Testing | RAP Rough | RAP Fine |
|---|---|---|---|
| 1 | Specific gravity | 2,2-2,6 | 2,2-2,6 |
| 2 | Absorption (%) | 1,8-2,9 | 1,8-2,8 |
| 3 | Bulk density (Kg / $m^3$) | 1940-2300 | 1600-2200 |
| 4 | Impact Value (%) | 4,3-33 | - |
| 5 | Abrasion resistance (%) | 18-30 | - |

## 2.4 Pyrolysis

Pyrolysis is a process of thermochemical decomposition of organic material by heating without or a little oxygen (vacuum and pressurized air) where the material undergoes a breakdown of the chemical structure into a gas phase. Pyrolysis that occurs in a chemical reaction process from burning organic material in a hot reactor tube reaches a temperature of 300-1000C so that the hydrothermal reaction will release gas, oil and solids. In general, the pyrolysis process takes place at temperatures above 300 degrees Celsius within 4-7 hours (Elkashef et al., 2018; Escola, J.M; Agusrdo, J; Serrano, D.P; Broenes, 2012; Wang et al., 2020). Pyrolysis process schematic in Figure 2.3.

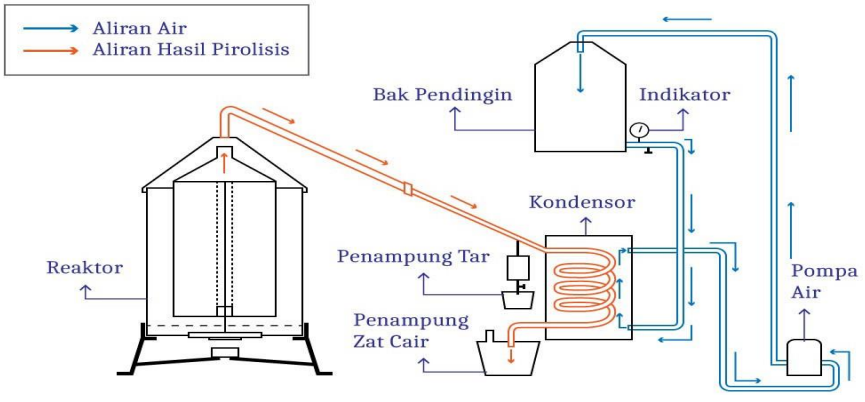



Figure 2.3. Pyrolysis process scheme (Istoto & Saptadi, 2019; Moinuddin Sarker, 2011)

## 2.5 Roadmap and State of The Art

The research will be conducted within two years of submission. In the first year the focus is on the RAP microstructure both by pyrolysis and non-pyrolysis. In the second year, it will look for the mechanical properties of a mortar made from pyrolysis based RAP. The research roadmap described in Figure 2.4.

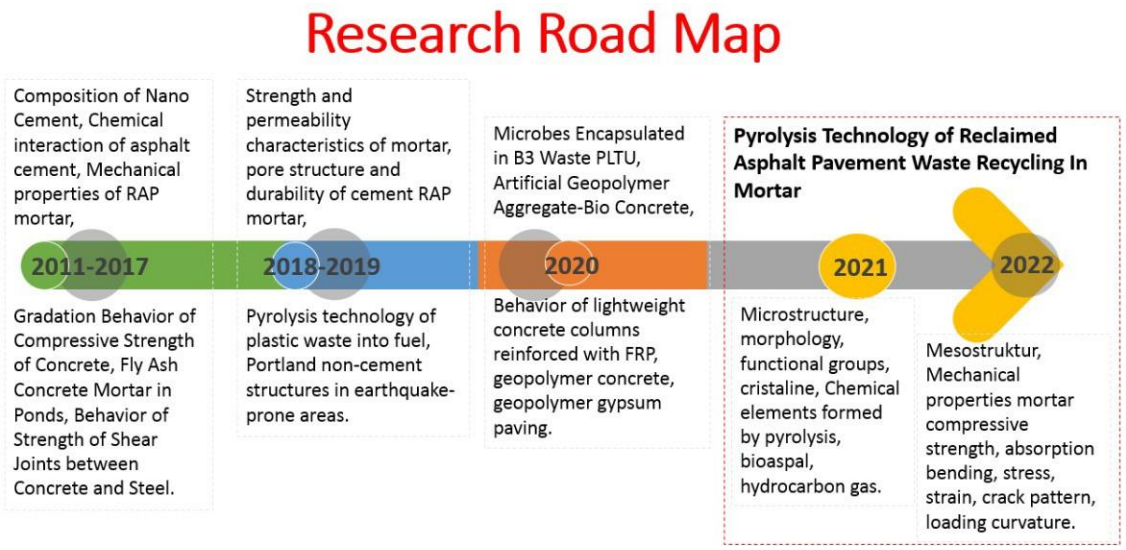



Figure 2.4. Research Roadmap

Table 2.2 State of The Art

| No | Reference | Method | Result |
|---|---|---|---|
| 1 | (Shi *et al*., 2020) (Shi et al., 2020) | Petrographic technology and isothermal micro calorimeter. | RAP exhibits higher ductility, toughness, and crack resistance compared to ordinary mortars. |
| 2 | (Chaidachatorn et al, 2019) (Chaidachatorn et al., 2019) | Mortar compressive strength, XRD, SEM. | Replacement of the RAP with an optimal ratio of 25% increases the compressive strength for low w / C <0.5. |
| 3 | (Abraham dan Ransinchung, 2019a) (Abraham & Ransinchung, 2019a) | Mercury Intrusion Porosimetry (MIP) | Formation and filling of micro pores by crystallization of product salts (ettringite and gypsum). |
| 4 | (Abraham dan Ransinchung, 2019b) (Abraham & Ransinchung, 2019b) | mesopori and makropori | Porosity increases with increasing RAP content, porosity and pore volume of concrete mix intrusion is lower than mortar mix. |

| | | | |
|---|---|---|---|
| 5 | (Abraham dan Ransinchung, 2018) (Abraham & Ransinchung, 2018) | RAP in natural aggregate substitution and fine aggregate gradation. | Compressive strength, flexural strength and split tensile strength decrease with increasing RAP content. |
| 6 | (Brand dan Roesler, 2017a) (Brand & Roesler, 2017b) | interface transition zone (ITZ) mortar with RAP aggregates. | ITZ with larger and more porous RAP aggregates with less calcium silicate hydrate (C-S-H) and calcium hydroxide (CH) at the asphalt interface |
| 7 | (Brand dan Roesler, 2017a) (Brand & Roesler, 2017b) | Zone interface transition (ITZ) properties | RAP aggregates reduce concrete strength and modulus due to: higher porosity in the ITZ, which results in a lower bulk modulus. |
| 8 | (Sola et al, 2017) (Sola & Ozyazgan, 2017) | Density, specific surface area of Blaine, compressive strength, water absorption, and SEM-EDS and XRD. | Blaine's density, compressive strength and surface area decrease, and the toughness increases, with the addition of recycled asphalt to the cement composition. |
| 9 | (Qiang et al, 2011) (Qiang et al., 2011) | SEM, calorimetry, and compressive strength tests. | Asphalt delays the initial hydration of cement and the asphalt membrane negatively impacts cement hydration. Cement products damage the asphalt membrane, and cement can hydrate due to the supply of water in the mortar. |

# CHAPTER 3
# RESEARCH METHODS

## 3.1 Procedure on Microstructure

This research was conducted in two stages of submission, namely submission of first year research and submission of second year research. The research flow diagram is presented in Figure 3.2. The research in the first year of submission is research on the microstructure study of RAP pyrolysis with experimental methods that begin with the RAP furnace to identify carbon in the RAP. Pyrolysis is carried out by processing the calcined RAP in a reactor heated with an electric heater to 500 ° C for 5 hours in Figure 3.1, and observing the gas that comes out of this pyrolysis process every hour. The oil results that come out will be continued with further analysis. The research used RAP solid waste in the pyrolysis reactor to be used as concrete mortar. Identification of material characteristics can be known by SEM, XRF, XRD and FTIR tests on RAP before and after pyrolysis. In this test, morphology will be obtained on the RAP microstructure, chemical content, crystal crystals in RAP and the functional groups formed on the RAP.

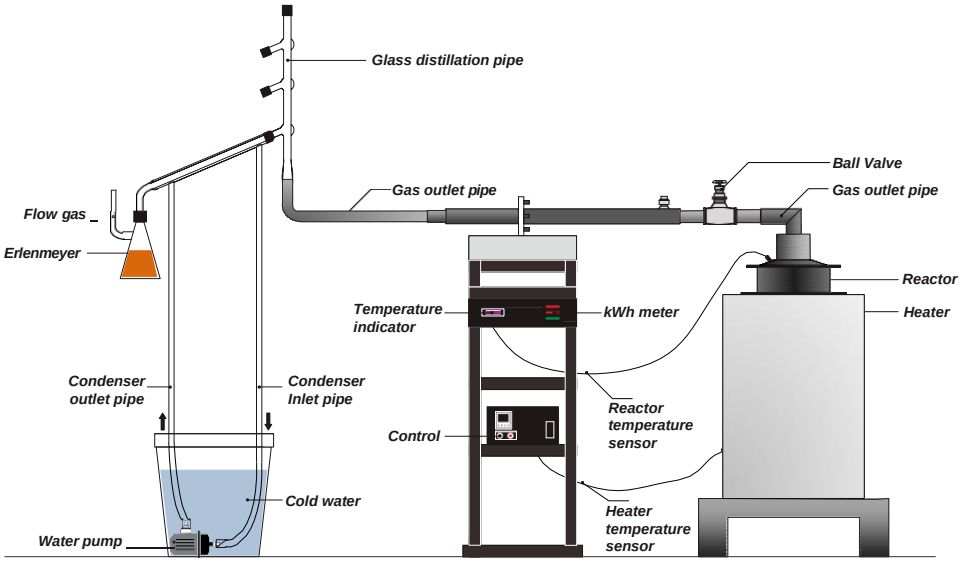



Figure 3.1. Pyrolysis illustration on RAP

## 3.2 Procedure on Mechanical Properties

Mechanical properties of RAP; This stage tests the mechanical properties of RAP mortar, such as testing for compressive strength, tensile strength and absorption. The RAP that was used with a pass size of 4.76 mm before pyrolysis. The constituent materials are

RAP / RAP-PIRO, Cement and Water. With a mix design mix according to the quality of the planned mortar. Testing the quality of the mortar using a Compression Test Apparatus with a 5x5x5cm cube specimen. While the mortar flexural tensile beam test uses a size of 4x4x16cm. The absorption test used a sample cylinder with a diameter of 10 cm and a thickness of 5 cm.

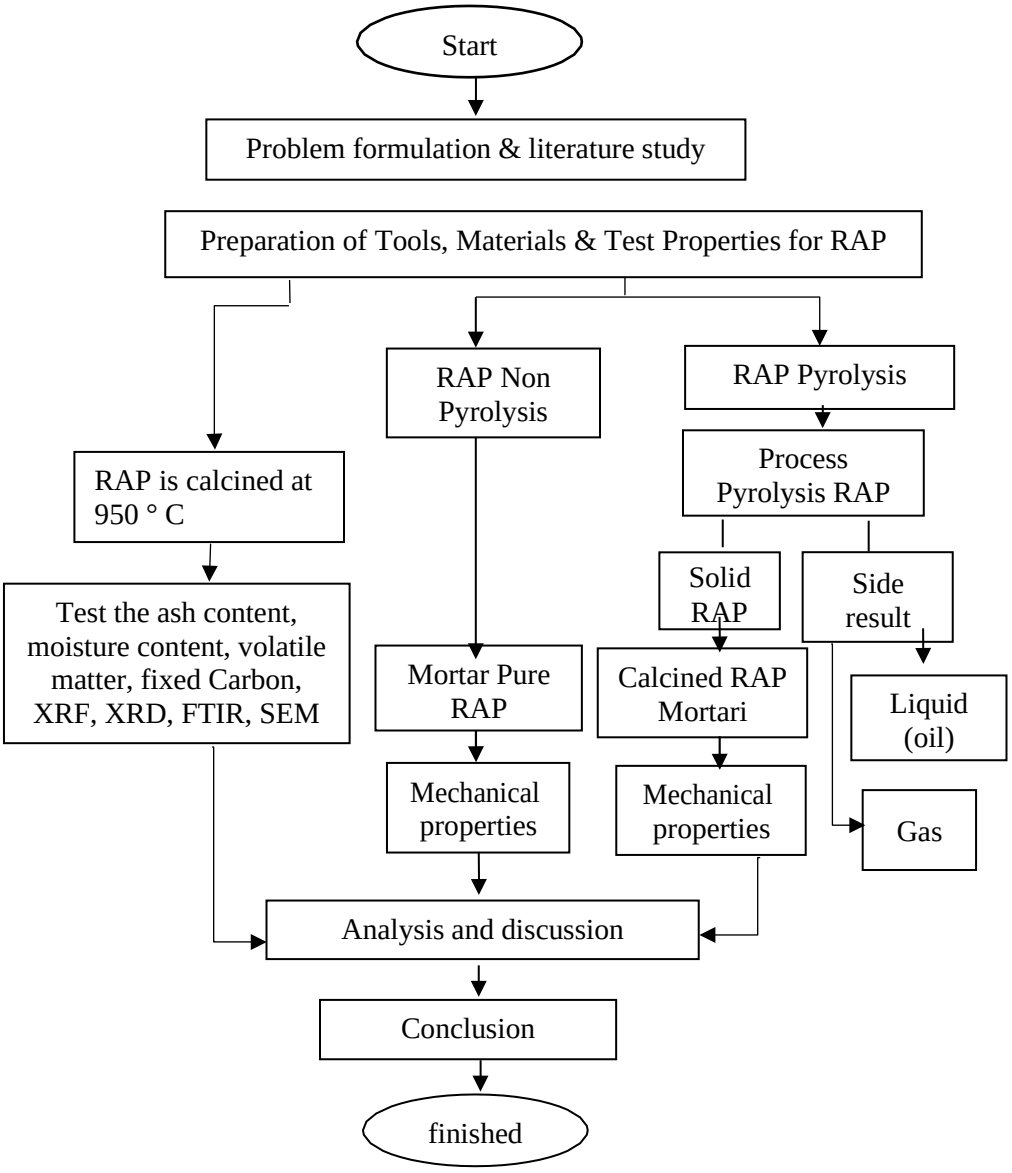



Figure 3.1. Research Flowchart

### 3.3 Experimental Analysis

**Experimental Analysis** In the mortar compressive strength test, compressive strength and flexural tensile strength were obtained from mortar RAP before pyrolysis and mortar after pyrolysis process by calculating the regression analysis on compressive strength against RAP variations, calculating stress-strain, Poison Ratio, Modulus of Elasticity, Pattern of collapse, Behavior shear, absorption rate on mortar, RAP bitumen content. All are related to their influence between tests with each other. Qualitative analysis was carried out on the analysis of SEM RAP morphological photo readings both in the conditions before pyrolysis and after pyrolysis, the chemical bonds in the RAP used XRF analysis both by oxides and elements, crystal crystal analysis formed from XRD testing with Match software tools version 3 for windows and functional groups formed on the RAP from FTIR readings.

Table 3.1 Target Contribution of Research

| No. | Activity | Parameter | Method | Outcome |
|---|---|---|---|---|
| **Tahun ke 1** | | | | |
| **MoU between UNDIP and TU Delft Netherland** | | | | |
| 1 | Cement material study, Reclaimed Asphalt Pavement, Pyrolysis | Material Properties and Fixed Carbon with Furnace, asphalt content, hydrocarbons | asphalt content, SNI 01-2354.1-2006 ; XRF, XRD, SEM & FTIR | Reputable International Journal (Scopus) |
| 2 | RAP Pyrolysis response with cement | Non & Pyrolysis RAP Microstructure ,functional groups, crystalline, chemical elements. | XRF, XRD, SEM & FTIR, | |
| **Tahun ke 2** | | | | |
| 1 | RAP Pyrolysis is taken by RAP solid waste, hydrocarbon gas & oil. | hydrocarbon gas, oil and post-pyrolysis RAP solid waste, gas & oil | Pyrolysis Experimental with a temperature of $500^0$C | Reputable International Journal (Scopus) |
| 2 | Research in the Laboratory of RAP Pyrolysis on mortar | Compressive strength of RAP mortar, flexural strength of RAP mortar, absorption of mortar, weight of contents. | XRF, XRD, SEM & FTIR, ASTM C109 ; ASTM C348 ; ASTM C642 ; ASTM C1585-13 | |

# CHAPTER 4
# COSTS AND ACTIVITIES SCHEDULE

## 4.1 Cost breakdown

Table 4.1 Description of Research Costs

| No | Description | Amount |
|---|---|---|
| **A** | **B** | **C** |
| I | Honorarium | Rp. 1.000.000,- |
| II | Operational Expenditures | Rp.16.500.000,- |
| III | Capital Expenditures | Rp. 12.500.000,- |

## 4.2 Schedule of activities

Table 4.2 Schedule of Research Activities

| Activities | **Month** | | | | | | |
|---|---|---|---|---|---|---|---|
| | April 2021 | Mei 2021 | Juni 2021 | Juli 2021 | Agustus 2021 | September 2021 | Oktober 2021 |
| Equipment Settings | | | | | | | |
| Laboratory Work | | | | | | | |
| Data processing | | | | | | | |
| Preparation of reports | | | | | | | |
| Publication | | | | | | | |

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Widger, A., Skilnick, F., Zabolotnii, E. (2012). Utilization of Recycled Asphalt in Cold Mixes and Cold In –Place Recycling Processes-Guidelines. In *Engineering-Training Clifton Associated Ltd. Communities of Tomorrow, Leveraged Municipal Innovation Fund*.

**APPENDIX A. UNDIP - TU Delft Collaborative Research Budget Plan**

| No | ITEM | UNIT | VOLUME | UNIT COST | TOTAL |
|---|---|---|---|---|---|
| I | HONORA RI UM | | | | |
| 1 | Construction Materials Laboratory Assistant | OH | 40 | Rp 25.000 | Rp 1.000.000 |
| | | | | | |
| II | OPERAT1ON AL COST | | | | |
| l | Semen /J50kg ex. tigaroda | sack | 5 | Rp 65,000 | Rp 325.000 |
| Z | Mortar cube mold | set | 25 | Rp 50,000 | Rp 1,250.000 |
| | Mortar block mold | set | 45 | Rp 55.000 | Rp 2,475.000 |
| 4 | Strain Gauges l0mm | piece | 100 | Rp 35,250 | Rp 3,525,000 |
| 5 | Strain Gauges rosette 20mm | piece | 100 | Rp 48,000 | Rp 4,h00,000 |
| 6 | Final Report | package | 1 | Rp 200,000 | Rp 200,000 |
| 7 | Discussion & meetings | package | 2 | Rp 210,000 | Rp 420,000 |
| 8 | Photocopies | package | 1 | Rp 420,000 | Rp 420,000 |
| 9 | Print Poster + Banner booth | package | 1 | Rp 357,750 | Rp 357,750 |
| | | | | | |
| IJ I | CAP I TAL EX PENDI FURE | | | | |
| l | Extraction analysis asphalt content | p m e | 2 | Rp 250,000 | ∘ 500.000 |
| | Compression Strenght | sample | 100 | Rp **40.000** | Rp 6.000.00( |
| 3 | Flexural Strenght | sample | 100 | Rp 40.000 | Rp 6.000,000 |
| | | | | | |
| | | | | Amount | Rp 27.272.750 |
| | | | | VAT | Rp 2.727.275 |
| | | | | TOTAL | Rp 30.000.025 |

Semaranu. Februai'j 2(J2I

Prof. lr. M. Agung Wibowo, MM, M.Sc., Ph.D
NIP. 19670208199403 1 t)05

**APPENDIX B. Organizational Structure and Division of Duty**

| Posision | Researcher Name | Duty |
|---|---|---|
| Chief | Prof. Ir. Mochamad Agung Wibowo, MM, MSc, Ph.D | in charge of coordinating researchers, designing methods, processing / analyzing data, writing journals |
| Member 1 | Prof. Dr. Ir. Han Ay Lie, M.Eng | tasked with coordinating research partners from TU Delft Netherland & writing journals |
| Member 2. | Bagus Haryo Setiadji, S.T., MT, PhD | tasked with preparing the University / Faculty MoU with TU Delft and writing a journal |
| Member 3 | Prof. Dr. Widayat, ST., MT | in charge of preparing equipment, materials, permits for research sites, analyzing data, monitoring implementation and writing journals |
| Doktoral Student Members | Mochammad Qomaruddin | with the task of preparing materials, equipment, testing observations, processing data and making progress / final research reports |
| Master Student Members | Felix Hariyanto Sugianto | with the task of preparing materials, equipment, testing observations, processing data and making progress / final research reports |
| Research Partners | Prof. Henk Marius Jonkers | Supervision of research & journal writing |

## APPENDIX C. Research Team Biodata

**CHIEF**

**Personal identity**

| | | |
|---|---|---|
| 1. Full name (with title) | : | Prof. Ir. Mochamad Agung Wibowo, MM, MSc, Ph.D |
| 2. Functional Position | : | Professor |
| 3. Structural Position | : | Dean Faculty of Engineering, Diponegoro University |
| 4. NIP/NIK | : | 19670208 199403 1 005 |
| 5. NIDN | : | 00080267002 |
| 6. Place and Date of Birth | : | Semarang, 8 February 1967 |
| 7. Home Address | : | Taman Setiabudi C-3, Banyumanik, Semarang |
| 8. Telephone / Fax / HP numbers | : | (024)7461911 / 0815 667 9099 |
| 9. Office Address | : | Civil Engineering Department, Engineering Faculty – Diponegoro University |
| 10. Phone / Fax Number | : | (024) 7460053 / (024) 7460055 |
| 11. E-mail address | : | agung.wibowo@ft.undip.ac.id |

**Education Background**

| | Bachelor | Master |
|---|---|---|
| Institution/University | Diponegoro University | Diponegoro University |
| Major | Civil Engineering | Master of Management |
| Year Attended | 1986-1992 | 1994-1996 |
| Title of Theses | The Analysis and Evaluation of Traffic Density on Arterial Roads (Case Study: Bangetayu Arterial Road) | Strategic Management in Construction-Based Companies |
| Supervisor | Ir. Nirmolo | Drs. Tarmizi, MBA |

| | Master | Doctoral |
|---|---|---|
| Institution/University | Nottingham University, UK | Nottingham University, UK |
| Major | Construction Management | Construction Management |
| Year Attended | 1998-1999 | 2000 – 2004 |
| Title of Theses | Health and Safety in Construction Project, A Case Study in Indonesian Building Construction | Modelling Labour Intensive Construction And Its Effect on a Developing Economy |
| Supervisor | Dr. William Askew | Dr. Mawdesley |

**Research Experience**

| No | Year | Research Title | Source of Funds | Amount |
|---|---|---|---|---|
| 1 | 2011 | The Analysis of Building Failure and Construction Failure | LPJKD | |
| 2 | 2012 | Cost of Quality in the Construction Industry | Engineering Faculty, Diponegoro University | |
| 3 | 2013 | The Principle of Contract Freedom in Construction Projects: Risk Management Perspective – **Member** | DIPA- Engineering Faculty, Diponegoro University | |
| 4 | 2014 | Risk Management Applications in Performance Based Contracts Reviewed from Project Life Cycle (Case Study on Semarang-Bawen Road Maintenance Project) | Engineering Faculty, Diponegoro University | |

| No | Year | Research Title | Source of Funds | Amount |
|---|---|---|---|---|
| 5 | 2014 | Analysis of Factors Affecting Auction Failure in the Procurement of Goods and Services in Government Agencies – **Member** | DIPA- Engineering Faculty, Diponegoro University | |
| 6 | 2015 | The Risk Management Application in Construction Projects Reviewed by the Types of Contract and Perceptions of Stakeholders in the Project (Case Study on Projects with Engineering Procurement Construction Contract Types) | Engineering Faculty, Diponegoro University | |
| 7 | 2015 | Risk Analysis on Supply Chain Management in Construction Projects and Their Effects on Project Performance | LPJKD | |
| 8 | 2015 | OHS Risk Analysis on the Implementation of Road Infrastructure Projects – **Member** | DIPA-Engineering Faculty, Diponegoro University | |
| 9 | 2015 | Sanitation for the Future – **Chief** | SMEC, Pty-ltd, Australia (the Collaboration of Diponegoro University and QUT, Australia) | |
| 10 | 2015 | Risk Analysis on Construction Project Supply Chain – **Chief** | Construction Services Development Institute (LPJK) Central Java Province | |
| 11 | 2016 | The Assessment Model of Construction Project Life Cycle to Reduction Waste Based on Green Supply Chain Management Infrastructure, Transportation, and Defence Technology – **Chief** | Research on Scientific Publication - PNBP UNDIP | IDR 90 millions |
| 12 | 2017 | The Assessment Model of Construction Project Life Cycle to Reduction Waste Based on Green Supply Chain Management Infrastructure, Transportation, and Defence Technology – **Chief** | Research on Scientific Publication - PNBP UNDIP (Second year) | IDR 80 millions |
| 13 | 2018 | Building an Implementation Model of Green Supply Chain Management Standards in the Construction Industry in Indonesia – **Chief** | DRPM Ministry of Research, Technology and Higher Education of the Republic of Indonesia (Year: 1 (2018)) | IDR 120 millions |
| 14 | 2019 | Building an Implementation Model of Green Supply Chain Management Standards in the Construction Industry in Indonesia – **Chief** | DRPM Ministry of Research, Technology and Higher Education of the Republic of Indonesia (Year 2 (2019)) | IDR 120 millions |
| 15 | 2019 | Driver and Barrier of Green Supply Chain Construction for Energy Saving and Reduce Waste | Research on Scientific Publication - PNBP UNDIP | IDR 80 millions |
| 16 | 2020 | Programme Master towrad Doctoral Degree for outstanding student | Research on Scientific Publication - PNBP UNDIP | IRD 120 millions |

**Experience of Devotion to Communities**

| No. | Year | Community service | Source of funds |
|---|---|---|---|
| 1 | 2010 | OHS (Occupational Health and Safety) Training for Construction Workers | Engineering Faculty, Diponegoro University |
| 2 | 2011 | OHS Training for Construction Workers | Engineering Faculty, Diponegoro University |
| 3 | 2012 | Socializationof Indonesia National Standard | Engineering Faculty of Diponegoro University |

| No. | Year | Community service | Source of funds |
|---|---|---|---|
| | | | andThe Ministry of Public Works and Public Housing of the Republic of Indonesia |
| 4 | 2013 | Project Management Training for Bank Indonesia Semarang | Bank Indonesia |
| 5 | 2014 | Project Management In House Training (IHT) for Representative Employees of Bank Indonesia Region VII | Bank Indonesia |
| 6 | 2014 | Socialization of OHS for Construction Workers | Engineering Faculty, Diponegoro University |
| 7 | 2015 | Socialization of Construction of Earthquake Resistant Houses in Bae District, Kudus Regency | Engineering Faculty, Diponegoro University |
| 8 | 2015 | OHS Socialization in SMK N 2 Salatiga | Engineering Faculty, Diponegoro University |
| 9 | 2018 | Durian Tree Planting Socialization for Local Economic Improvement and Environmental Conservation in Ngrenjah Sumberagung Village, Ngaringan District, Grobogan, Central Java Province | Engineering Faculty, Diponegoro University |
| 10 | 2018 | Planning for Clean Water System in Girikusumo Islamic Boarding School | Self-funded |

**Experience of Writing Scientific Articles in Journal**

| No | Title of Scientific Article | Volume/Number/ Page/Year | Journal Name |
|---|---|---|---|
| **Publication in Reputable International Journal** | | | |
| 1 | Strategies, performance, sustainability and competitiveness model: Small and medium construction services industries in Indonesia | Vol 25, No 8, 2013, 1186-1196 | World Applied Sciences Journal |
| 2 | Factors Affecting Bidding Strategy in Construction | Volume 9 (5), March 2015 | http://www.ajbasweb.com/old/ajbas_March_2015.html |
| 3 | E-procurement adoption in government institution: Predicting social values effect on intention and usage behaviour of e-procurement | 16 (2), 2015, 167-184 | International Journal of Business and Society |
| 4 | An Artificial Neural Network Model of Hydraulic Static Pile Driver Productivity in Silt Soil | Vol 10 (1) January 2016 | http://www.ajbasweb.com/old/ajbas_January_2016.html |
| 5 | Stormwater Reuse, a Viable Option: Fact or Fiction? | Volume 56, December 2017 | https://www.sciencedirect.com/science/article/pii/S03135926173005 3X |
| 6 | Factors for Implementing Green Supply Chain Management in The Construction Industry | Vol 11, No 4 (2018) | Journal of Industrial Engineering and Management http://www.jiem.org/index.php/jiem/article/view/2637 **Scopus: Q3 (SJR: 0,215) H-Indeks: 16** |
| 7 | Investigation of the Relationship Between the Knowledge Management Process and Performance of a Construction Company: an Empirical Study | Volume 13, 417-435 (2018) | Interdisciplinary Journal of Information, Knowledge, and Management |

| No | Title of Scientific Article | Volume/Number/ Page/Year | Journal Name |
|---|---|---|---|
| 8 | Estimating an Reducing The Release of Greenhouse Gases in Local Roa d Pavement Construction | Volume 9,No.5 (2019) | International Journal on Advanced Science Engineering Information Technology, Vol. 9 (2019) No. 5. Hal ISSN: 2088-5334 DOI:10.18517/ijaseit.9.5.9705 Impact Factor Jurnal: 0,23 Q2 |
| **Publication in International Journals** | | | |
| 1 | Modelling of Knowledge Management, Corporate Culture and Performance in Construction Firm | Vol 1, No. 11, 2011, 2286-2292 | International Journal of Build and Applied Scientific Research |
| 2 | Analysis of Subcontracting in the Construction Industry in Indonesia | Vol 6, No 1 (2015) | http://www.ijrbtonline.com/index.php/ijrbt/article/view/6.1.378 |
| 3 | Influence Of Bidding Strategy On Project Performance in Construction | Vol 9 Issue 5, May 2015 | http://www.aensiweb.net/AENSIWEB/anas/anas_May_2015.html |
| 4 | Construction Risk Management Model of Housing Reconstruction Basing the Community after Earthquake Disaster | Volume 8, Issue 10, pp. 1220-1236October 2017 | International Journal of Civil Engineering and Technology http://www.iaeme.com/ijciet/IJCIET_Paper.asp?sno=9389 |
| **Publication in the National Journal** | | | |
| 1 | Accuracy of Classification on Grouping Construction Project Managers Based on Factors of Human Resource Development Using Discriminant Analysis | Volume 20, No 2, 2014 | Media Komunikasi Teknik Sipil https://ejournal.undip.ac.id/index.php/mkts/article/view/9253 |
| 2 | Application of Risk management in the Development of the Central Java Regional Water Supply System (SPAM) (Case Study on the Construction of the Bregas Regional SPAM Transmission Network) | Volume 21, No 2, 2015 | Media Komunikasi Teknik Sipil https://ejournal.undip.ac.id/index.php/mkts/article/view/11238 |
| 3 | Comparative Analysis of the Effect of Using Flyslab and Floordeck Plate in Actualizing Lean Construction | Volume 22, No 1, 2016 | Media Komunikasi Teknik Sipil https://ejournal.undip.ac.id/index.php/mkts/article/view/12405 |
| 4 | Comparative Analysis of Traditional Contracts and Performance Based Contracts (KBK) Based on Contractor Perception Risk with Analytical Hierarchy Process (AHP) Method | Volume 22, No 1, 2016 | Media Komunikasi Teknik Sipil https://ejournal.undip.ac.id/index.php/mkts/article/view/12402 |
| 5 | Ergonomics in Work Method to Improve Construction Labour Productivity | Volume 10, No 1, 2016 | Media Komunikasi Teknik Sipil https://ejournal.undip.ac.id/index.php/ijse/article/view/11345 |
| 6 | Evaluation of the Effects of Floods, Excessive Loads and Quality of Construction on Road Conditions | Vol 17, No 2, 2017 | Jurnal Transportasi http://journal.unpar.ac.id/index.php/journaltransportasi/article/view/2729 |
| 7 | Analisa Perbedaan LPS (Last Planner System) dengan Sistem Konvensional serta Pengaruh CPM dan Bar Chart pada LPS | Vol.25,No.1 tahun 2020 | Jurnal Wahana Teknik Sipil ISSN:0853-8727 e-ISSN:2527-4333, Akreditasi Sinta 4 |

**Experience of Oral Presentation in The Scientific Meeting/Seminar**

| No | Name of Scientific Meeting / Seminar | Title of Scientific Article | Time & Place |
|---|---|---|---|
| **Publication on the Scopus Indexed International Proceedings** | | | |
| 1 | CME 2007 Conference - Construction Management and Economics: 'Past, Present and Future' pp. 1323-1332 | Modelling risk management framework in BOT projects: Indonesia's case study | |
| 2 | The 5th International Conference of Euro Asia Civil Engineering Forum (EACEF-5) | The Analysis of Supply Chain Performance Measurement at Construction Project | Procedia Engineering 125 (2015) 25-31 Surabaya, 26 September 2015 |
| 3 | The 5th International Conference of Euro Asia Civil Engineering Forum (EACEF-5) | Identification and analyse of influence level on waste construction management of performance | Procedia Engineering 125 (2015) 46 – 52 Surabaya, 26 September 2015 |
| 4 | The 5th International Conference of Euro Asia Civil Engineering Forum (EACEF-5) | Sensitivity Analysis of Risk from Stakeholder Perception A Case Study: Semarang-Solo Highway Project | Procedia Engineering Volume 125, 2015, 12-17 http://www.sciencedirect.com/science/article/pii/S1877705815033202 |
| 5 | The 5th International Conference of Euro Asia Civil Engineering Forum (EACEF-5) | The Analysis of Supply Chain Performance at Construction Project | Procedia Engineering Volume 125, 2015, 25-31 http://www.sciencedirect.com/science/science/article/pii/S1877705815033226, |
| 4 | The 5th International Conference of Euro Asia Civil Engineering Forum (EACEF-5) | Analysis of Factors Affecting Design Changes in Construction Project with Partial Least Square (PLS) | Procedia Engineering Volume 125, 2015, 40-45 http://www.sciencedirect.com/science/science/article/pii/S1877705815033251 |
| 5 | The 5th International Conference of Euro Asia Civil Engineering Forum (EACEF-5) | Knowledge Management Maturity in Construction Companies | Procedia Engineering 125, pp. 89-94 Surabaya, 26 September 2015 |
| 6 | The 5th International Conference of Euro Asia Civil Engineering Forum (EACEF-5) | Risk analysis of BOT scheme on post-construction toll road | Procedia Engineering Volume 125, 2015, 117-123 |
| 7 | The 5th International Conference of Euro Asia Civil Engineering Forum (EACEF-5) | An analysis of bidding strategy, project performance and company performance relationship in construction | Procedia Engineering Volume 125, pp. 95-102 |
| 7 | The 2nd International Conference on Civil Engineering Research (ICCER 2016) | The Application of Supply Chain Performance Measurement in SCOR Model at The Building Project | ARPN Journal of Engineering and Applied Sciences Surabaya, 26 January 2016 |
| 8 | The 3rd International Conference on Sustainable Civil Engineering Structures and Construction Materials (SCESCM) | Supply Chain Management Strategy for Recycled Materials to Support Sustainable Construction | Procedia Engineering Volume 171, 2017, 185-190 http://www.sciencedirect.com/science/article/pii/S1877705817303351 |

| No | Name of Scientific Meeting / Seminar | Title of Scientific Article | Time & Place |
|---|---|---|---|
| | | | Bali, Indonesia, 5-7 September 2016 |
| 9 | The 3rd International Conference on Sustainable Civil Engineering Structures and Construction Materials (SCESCM) | Dynamic Modelling of the Relation Between Bidding Strategy and Construction Project Performance | Procedia Engineering Volume 171, pp. 341-347 Bali, Indonesia, 5-7 September 2016 |
| 10 | The 3rd International Conference on Sustainable Civil Engineering Structures and Construction Materials (SCESCM) | Innovation Performance of Large Contractor in Indonesia: Influencing Factors and its Impact on Firm's Performance | Procedia Engineering Volume 171, pp. 370-378 |
| 11 | The 3rd International Conference on Sustainable Civil Engineering Structures and Construction Materials (SCESCM) | The Critical Point in the Certification System for Project Manager in Indonesia | Procedia EngineeringVolume171, pp. 362-369 |
| 12 | 1st International Conference on Energy, Environment and Information System (ICENIS) 2016 | The Identification of Waste Construction at Construction Project Life Cycle | Advance Science Letter Volume 23, Number 3, Maret 2017 http://www.ingentaconnect.com/ contentone/asp/asl/2017/00000023/00000003/art00293 |
| 13 | 6th International Conference of Euro Asia Civil Engineering Forum, EACEF 2017 | Model of Construction Waste Management Using AMOS-SEM for Indonesian Infrastructure Projects | MATEC Web of Conferences 138,05005 Seoul, South Korea; 22-25 August 2017 |
| 14 | The 2nd International Conference on Engineering and Technology for Sustainable Development (ICET4SD 2017) | Factor identification of higher education choice to enhance brand awareness of state university | MATEC Web of Conferences 154,01051 Yogyakarta 13 September 2017 |
| 15 | 6th International Conference on Education, Concept, and Application of Green Technology, EIC 2017 | Mapping of Information and Identification of Construction Waste at Project Life Cycle | AIP Conference Proceedings 1941,020049 Semarang; Indonesia; 11 October 2017 |
| 16 | 2nd International Joint Conference on Advanced Engineering and Technology, IJCAET 2017 and International Symposium on Advanced Mechanical and Power Engineering, ISAMPE 2017 | Determining Factors for Implementing Green Supply Chain Management in the Construction Industry: A Literature Review | MATEC Web of Conferences 159,01022 Bali; Indonesia; 24 - 26 August 2017 |
| 17 | 2nd International Joint Conference on Advanced Engineering and Technology, IJCAET 2017 and International Symposium on Advanced Mechanical and Power Engineering, ISAMPE 2017 | Developing a Prototype of Early Warning System of Delay Risks for Public Projects (EWaSDRiP) | MATEC Web of Conferences 159,01015 Bali; Indonesia; 24 - 26 August 2017 |
| 18 | 3rd International Conference on Construction and Building Engineering: Smart Construction Towards Global Challenges, ICOLBUILD 2017 | The Concept of Value Stream Mapping to Reduce of Work-Time Waste as Applied the Smart Construction Management | AIP Conference Proceedings1903,070010 Palembang; Indonesia; 14-17 August 2017 |

| No | Name of Scientific Meeting / Seminar | Title of Scientific Article | Time & Place |
|---|---|---|---|
| 19 | 6th International Conference of Euro Asia Civil Engineering Forum, EACEF 2017 | Strategy Toward Sustainable Local Road Network infrastructure | MATEC Web of Conferences 138,07007Seoul, South Korea; 22-25 August 2017 |
| 20 | The 4th International Conference on Rehabilitation and Maintenance in Civil Engineering (ICRMCE 2018) | Reducing Carbon Emission in Construction Base on Project Life Cycle (PLC) | MATEC Web of Conferences 195,06002 Solo 11-12 July 2018 |
| 21 | The 4th International Conference on Rehabilitation and Maintenance in Civil Engineering (ICRMCE 2018) | User cost estimation on flexible and rigid pavement | MATEC Web of Conferences 195,06011 |
| 22 | The 4th International Conference on Rehabilitation and Maintenance in Civil Engineering (ICRMCE 2018) | Are Indonesia Contractors Ready to Implement Last Planner System? – An Early Investigation | MATEC Web of Conferences 195,06012 Solo 11-12 July 2018 |
| 23 | 3th International Conference on Energy, Environment and Information System (ICENIS) 2018 | Developing Indicators to Implementing Green Material Management in Construction Industry: A Literature Review | E3S Web of Conferences 73,08009 Semarang, 2018 |
| 24 | International Seminar 2019 | Unit Processes Identification of Maintenance on Rigid and Flexible Pavement of Local Road | IOP Conf. Series: Material Science and Engineering 615 (2019) 012115 DOI:10.1088/1757-899X/615/1/012115 |
| 25 | International seminar 2018 | User Cost Estimation on Flexible and Rigid Pavement | MATEC Web of Conferences 195, 06011 (2018), ICRMCE 2018 DOI:10.1051/matecconf/20181950611 |
| 26 | International Seminar (SCESCM 2018 | Agency Cost Estimation on Flexible and Rigid Pavement | MATEC Web Conferences 2588, 02020 (2019), SCESCM 2018. http://doi.org/10.1051,matecconf/201925802020 |
| 27 | The 3rd International Conference on Concrete Sustainability - fib ICCS20 16-18 Sept 2020, The Czech Technical University in Prague | Reducing the release of greenhouse gases in the rigid pavement material transport process unit | Submit (on going process) |
| 28 | The 3rd International Conference on Concrete Sustainability - fib ICCS20 16-18 Sept 2020, The Czech Technical University in Prague | Implementation of green supply chain management for green management material and green construction in Indonesian road projects: a literature review | Submit (on going process) |
| 29 | The 3rd International Conference on Concrete Sustainability - fib ICCS20 16-18 Sept 2020, The | Comparing energy and waste in FABA polymer concrete and regular concrete on rigid pavement: a literature review | Submit (on going process) |

| No | Name of Scientific Meeting / Seminar | Title of Scientific Article | Time & Place |
|---|---|---|---|
| | Czech Technical University in Prague | | |
| 30 | Transforming The World to Sustaiable Developmen Goals, Kuching Malaysia, 2021 | Developing Indicators of Green Operation and Maintenance of Green Supply Chain Management in Construction Industry | Submit (on going process) |
| **Publication on the International Seminar Proceedings** | | | |
| 1 | The 3rd International Conference of EACEF (European Asian Civil Engineering Forum) Atma Jaya YogyakartaUniversity, Indonesia | Knowledge Management and Corporate Performance In Construction | 20-22 September 2011 |
| 2 | International Conference 'Facing the Future With Eco-Engineering', Faculty of Engineering, Sam Ratulangi University | Developing Knowledge Management Framework for Sustainable Construction | 17 September 2012 |
| 3 | The 1st International Joint Conference on Advanced Engineering (IJCAE) 2012 | Impacts of Knowledge Management On Construction Organizations | 18-19 October 2012 |
| 4 | CIB World Seminar, TG 102 and TG 117, QUT, Brisbane, Australia | A System Dynamics Modelling for Knowledge Management, Culture and Performance (KMCP): Case study in Indonesian Construction Firm | 5-9 May, 2013 |
| 5 | The 7th International Conference on Software, Knowledge, Information Management and Applications, Chiang Mai, Thailand | Relationship Between Knowledge Management Processes And Firm Performance In Indonesian Construction | Dec 18-20, 2013 |
| 6 | The 3rd International Conference on Sustainable Technology and Development (ICSTD Bali 2014) | The Conceptual Framework of Design Change Effects in Some Project Delivery Systems | Bali, 30-31 Oktober 2014 |
| 7 | The 3rd International Conference on Sustainable Technology and Development (ICSTD Bali 2014) | Conceptual Framework of Bidding Strategy in Order to Improve Construction Project Performance | Bali, 30-31 Oktober 2014 |
| 9 | Proceedings of the International Conference of Logistic and Supply Chain Management System 2016 | The Localized Framework of Construction Supply ChainPerformance Indicators Based on the SCOR Model | Denpasar, 20 Juli 2016 |
| 10 | Proceeding The 3rd International Conference on Engineering, Technology, and Industrial Application | Risk Analysis at Supply Chain Management in Construction (Case Study: Building Project) | Denpasar, 2016 |
| 11 | VETOMAC 2017 Preface I 12th World Congress on Engineering Asset Management & 13th International Conference on Vibration Engineering and Technology of Machinery | Risk Application in a Infrastructure Project A Case Study: In Conventional Contract And Performance Based Contract (Owner Perspective) | Brisbane, Australia, 2017 |
| 12 | IOP Conference Series: Earth and Environmental Science, Volume 448, The 1st International Conference on Environment, | Strategy of Change Construction Method to Increase Productivity and | 23 - 24 October 2019, Central Java Province, Indonesia |

| No | Name of Scientific Meeting / Seminar | Title of Scientific Article | Time & Place |
|---|---|---|---|
| | Sustainability Issues and Community Development Indonesia | Reduce Waste in the Private University Buildings | |
| 13 | IOP Conference Series: Earth and Environmental Science, Volume 448, The 1st International Conference on Environment, Sustainability Issues and Community Development Indonesia | Lean Construction: Evaluation Of Waste And Carbon Footprint In Construction Project | 23 - 24 October 2019, Central Java Province, Indonesia |
| **Publication on the National Seminar Proceedings** | | | |
| 1 | Seminar Nasional VII Teknik Sipil 2011, ITS, Surabaya | Benefits of Knowledge Management Implementation in Construction Companies | 3-4 February 2011 |
| 2 | Proceeding Seminar Nasional Multi Disiplin Ilmu dan Call for Papers Unisbank | Supply Chain Application: Procurement of Inter-Island Construction Materials | Semarang, 20 August 2015 |
| 3 | Prosiding Konferensi Nasional Teknik Sipil (KoNTekS) ke 12 | Analisis Emisi Gas Rumah Kaca Pada Tahap Produksi Material Dan Konstruksi Perkerasan Jalan Lentur | Batam, BMPTTSSI, Konferensi Nasional Teknik Sipil ke 12, Tahun 2018 |
| 4 | Prosiding Konferensi Nasional Teknik Sipil (KoNTekS) ke 13 | Pengurangan Emisi Gas Rumah Kaca pda Unit Proses Transportasi Material Perkerasan Lentur | Banda Aceh, BMPTTSSI, Konferensi Nasional Teknik Sipil ke 13, Tahun 2019 |

**Experiences in Writing Book And/Or Book Chapter**

| No. | Tahun | Judul | Chapter | Source |
|---|---|---|---|---|
| 1 | 2018 | Risk Management Treatise for Engineering Practitioners | Risk Management in Indonesia Construction Project: A Case Study of a Toll Road Project | https://www.intechopen.com/books/risk-management-treatise-for-engineering-practitioners/risk-management-in-indonesia-construction-project-a-case-study-of-a-toll-road-project<br>DOI: 10.5772/intechopen.79457<br>ISBN: 978-1-78984-601-0 |
| 2 | 2018 | Risk Application on Infrastructure in Conventional Contract and Performance Based Contract from Perspective of Owner | Asset Intelligence through Integration and Interoperability and Contemporary Vibration Engineering Technologies | https://link.springer.com/chapter/10.1007/978-3-319-95711-1_67<br>DOI: https://doi.org/10.1007/978-3-31995711-1_67<br>ISBN: 978-3-319-95711-1 |
| 3 | 2020 | Industri 4.0 dari berbagai perspektif (Book Chapter) | Budaya Organisasi dan Kesiapan Perguruan Tinggi Menyongsong Era INDUSTRI 4.0 | The Collaboration Engineering Faculty and Andi Offset Jogyakarta, tahun 2020 (on going, submit) |

**Experience of Acquisition Ipr (Intellectual Property Rights)/Patent**

| No | Year | Title / Theme of IPR | Type | Registration / Certificate No. |
|---|---|---|---|---|
| 1 | 2017 | Modelling of Knowledge Management, Culture and Performance in Construction Firm | Patent No:01905 | 3 April 2017 |

**Awards in The Last 10 Years (From The Government, Association Or Other Institutions**

| No | Type of Award | Awarding Institution | Year |
|---|---|---|---|
| 1 | Satya Lencana Karya Satya 20 Years Award | Republic of Indonesia Government | 2017 |

**External Examiner**

| No | Student candidate | University | Year |
|---|---|---|---|
| 1 | Yasser Wahyudin (Programme: Doctoral Science Politique) | Universite De Lyon, France | 2019 |

**External Promotor/Supervisor**

| No | Student candidate | University | Year |
|---|---|---|---|
| 1 | Fajar Sri Handayani (Programme : Doctor of Civil Engineering) | Sebelas Marert University, Surakarta | 2017 |
| 2 | Agustinus Waskioto Nugroho (Programme: Doctor of Civil Engineering) | Sebelas Maret University, Surakarta | 2018 |

All data that I filled in and listed in this biodata are true and can be legally justified. If in the future it turns out that there is a discrepancy with reality, I am able to accept the risk.
Thus I made this biodata truthfully to fulfil one of the requirements to be an external assessor for professorship

Semarang, February 2021

Prof. Ir. M. Agung Wibowo, MM, M.Sc., Ph.D
NIP. 19670208 199403 1 005

**MEMBER 1**

**Personal identity**

| | |
|---|---|
| Full Name | : Prof. Dr. Ir. Han Ay Lie, M.Eng |
| NIP | 195611091985032002 |
| Place and Date of Birth | : Semarang, 9 November 1956 |
| Functional Position | : Profesor/Guru Besar |
| Gender | : Female |
| Structural Position | : Pembina Utama Madya / IV D |
| Unit Kerja | : Departemen Teknik Sipil Fakultas Teknik Universitas Diponegoro |
| Office Address | : Jl. Prof. Soedarto, SH, Tembalang, Semarang 50275, Telp: 024-7474770 |
| Email | : hanaylie@live.undip.ac.id, hanaylie@hccnet.nl |
| Home Address | : Jl. Bukit Ganda 11, Semarang, Jawa Tengah - Indonesia |
| Phone | : 024 - 7472498 / 081 128 0424 |
| Website | : https://hanaylie.id/ |

**Profil Akademik**

- Scopus ID : 57199323133 (Han Ay Lie, *h*-index: 7)
  https://www.scopus.com/authid/detail.uri?authorId=57199323133
- Sinta ID : 6028401 (Han Ay Lie)
  http://sinta2.ristekdikti.go.id/authors/detail?id=6028401&view=overview
- Google Scholar : Han Ay Lie
  https://scholar.google.co.id/citations?user=qiaEIAEAAAAJ&hl=id&oi=ao
- Research Gate : Han Ay Lie
  https://www.researchgate.net/profile/Han_Lie

**Minat Penelitian**

- Graded concrete
- Fiber Reinforced Plastics for Concrete
- Retrofitting and external reinforcing
- Modeling and Finite Element Analyses

**Riwayat Pendidikan**

| Tahun Lulus | Jenjang | Sekolah/Perguruan Tinggi | Jurusan/Bidang Studi |
|---|---|---|---|
| 1969 | SD | Sekolah Yayasan Marsudirini | - |
| 1972 | SMP | SMP Maria Mediatrix | - |
| 1975 | SMA | SMA Loyola II Sedes Sapientiae | Ilmu Pasti dan Pengetahuan Alam |
| 1982 | S1 | Universitas Diponegoro | Teknik Sipil |
| 1992 | S2 | Manitoba University, Winnipeg Canada | Struktur dan Material |
| 2013 | S3 | Universitas Diponegoro, Joint research dengan The National University of Singapore (NUS) dan North Carolina State University (NCSU), USA | Struktur |
| 2013 | Post Doktor | TU Delft, the Netherlands | Micro Concrete Engineering |

**Pengalaman Organisasi dan Struktural**

| No | Organisasi | Jabatan | Tahun |
|---|---|---|---|
| 1 | Ketua Laboratorium Bahan dan Konstruksi, Teknik Sipil UNDIP | Ketua | 2004 – 2012 |
| 2 | Ketua Kelompok Keahlian Konstruksi, Teknik Sipil UNDIP | Ketua | 2012 – 2014 |
| 3 | American Concrete Institute ACI | Anggota | 1990 – sekarang |
| 4 | Indonesia Construction Association (HAKI) | Anggota | 2006 – sekarang |
| 5 | American Concrete Institute Indonesia Chapter | Sekretaris | 2013 – sekarang |
| 6 | *fib*-CEB | Commission 7 Sustainable Concrete, Member | 2015 – sekarang |
| 7 | IABSE | Anggota | 2015 – sekarang |
| 8 | *fib*-Indonesia | Ketua | 2017 – sekarang |
| 9 | Team perumus SNI Beton dan Fiber | Anggota | 2018 – sekarang |

**Riwayat Kepangkatan dan Jabatan**

**a. Riwayat Kepangkatan**

| No | Pangkat/Golongan | TMT |
|---|---|---|
| 1 | Penata Muda / III A | 1 Maret 1985 |
| 2 | Penata Muda Tk. I / III B | 1 November 1995 |
| 3 | Penata / III C | 1 November 1998 |
| 4 | Penata Tk. I / IIID | 1 Februari 2003 |
| 5 | Pembina / IV A | 1 April 2003 |
| 6 | Pembina Tk. 1 / IV B | 1 April 2008 |
| 7 | Pembina Utama Muda / IV C | 1 April 2010 |
| 8 | Pembina Utama Madya / IV D | 1 Oktober 2017 |

**b. Riwayat Jabatan Akademik / Fungsional**

| No | Pangkat/Golongan | Tahun |
|---|---|---|
| 1 | Asisten Ahli Madya | 1985 |
| 2 | Asisten Ahli | 1986 |
| 3 | Lektor Muda | 1995 |
| 4 | Lektor Madya | 1998 |
| 5 | Lektor Kepala | 2003 |
| 6 | Guru Besar/Profesor | 2017 |

**Pengalaman Penelitian**

| No. | Judul Penelitian | Sumber Dana (Rp) | Kedudukan dalam Penelitian | Tahun |
|---|---|---|---|---|
| 1. | Penelitian pemanfaatan sheet dan rod fiber untuk perkuatan balok T "Respon Sika CarboDur® RODS® dan SikaWrap® -231 C Sheets akibat respon dinamik | SIKA, NCKU- NCREE | Anggota | 2020-2021 |
| 2. | Penelitian Dasar Hibah Bersaing: "Pengaruh Penggunaan Viscocrete pada Perilaku Self Compacting Concrete" | Dana DIPA | Ketua | 2018 |

| No. | Judul Penelitian | Sumber Dana (Rp) | Kedudukan dalam Penelitian | Tahun |
|---|---|---|---|---|
| 3. | Graded Concrete, in collaboration with the Nihon University in Fukushima, Japan and the UNS in Surakarta, Indonesia | | Anggota | |
| 4. | The aspect of Multi Inclusion in concrete, funded by a grand from the Engineering Faculty, Diponegoro University | Dana Lokal UNDIP | Anggota | |
| 5. | Insinas Riset Pratama Individu. "Balok Precast Bottom Ash sebagai Paving dan Bata Beton" | Bekerja sama dengan UNISNU Jepara | Anggota | 2016-2017 |
| 6. | Penelitian Kerjasama Antar Perguruan Tinggi. "Efektifitas mortar beton fly ash pada kolam dengan pengaruhnya terhadap ikan nila (oreochromis niloticu)" | Bekerja sama dengan UNISNU Jepara dan fakultas Perikanan Undip. | Anggota | 2016-2018 |
| 7. | Penelitian Strategis Nasional. "pengembangan senyawa Ca(C18H3502)2 sebagai bahan tambahan beton untuk meredam serangan korosi ion klorida pada tulangan beton bertulang" | Bekerja sama dengan Universitas Jendral Soedirman, Purwokerto-Indonesia | Anggota | 2016-2017 |
| 8. | Ipteks. "Balok Precast lantai jembatan dari limbah abu layang" | Bekerja sama dengan ITS-Surabaya dan Unissula - Semarang. | Anggota | 2015-2016 |

**Scientific Committees/Reviewer/Editor**

| Editor/Reviewer |
|---|
| ACI Structural and Materials Journals (https://www.concrete.org/publications.aspx) |
| AITI-Advances in Technology Innovation (http://ojs.imeti.org/index.php/AITI) |
| CED (http://ced.petra.ac.id/) |
| GEOMATE (https://www.geomatejournal.com/) |
| IJETI Journal (http://ijeti.imeti.org/) |
| IRECE (https://www.praiseworthyprize.org/jsm/index.php?journal=irece) |
| JESTEC (http://jestec.taylors.edu.my/) |
| Structures (https://www.journals.elsevier.com/structures) |
| UTM Jurnal Teknologi (https://jurnalteknologi.utm.my/index.php/jurnalteknologi) |

**Penguji Eksternal/Advisor**

| Institusi/Universitas | Jabatan |
|---|---|
| Ph.D. Program, Department of Civil Engineering, National Cheng Kung University, Taiwan | Co-Advisor |
| Degree of Master of Science, Department of Civil Engineering, National Cheng Kung University, Taiwan | Examiner |
| PhD TU Delft Graduate School, The Netherlands | Examiner |

**Publikasi**

**a) Jurnal Internasional Terindeks Scopus**

1. Haryanto, Y., Wariyatno, N.G., Hu, H. T., **Han A. L** Hidayat, B. A., 2021, "Investigation on Structural Behaviour of Bamboo Reinforced Concrete Slabs under Concentrated Load", *Journal of Sains Malaysiana (SCI)*, Vol. 50(1), Pp. 227-238.

http://dx.doi.org/10.17576/jsm-2021-5001-22

2. Maryoto, A., **Han. A. L**., Jonkers, H. M., 2021, "Flexural strength of concrete-galvalume composite beam under elevated temperatures", *Computers and Concrete*, Vol. 27(1), Pp. 13-20.
3. Hidayat, B. A., Hu, H. T., Hsiao, F. P., **Han A. L**., Pita, P., & Haryanto, Y., 2020, "Seismic performance of non-ductile detailing RC frames: An experimental investigation", *Earthquakes and Structures*, Vol. 19(6), Pp. 485-498.
http://dx.doi.org/10.12989/eas.2020.19.6.485
4. Triwiyono, A., **Han, A. L**., Aryanto, A., Tudjono, S., Gan, B. S., 2020, "Effect of Specimen Gauge Reduction on Uniaxial Tension Properties of Reinforcing Steel", *Journal of Iron and Steel Research International*, Vol. 27(8), Pp. 964-971.
https://doi.org/10.1007/s42243-020-00458-1
5. Anggoro, P. W., Anthony, A. A., Tauviqirrahman, M., Jamari., Bayuseno, A. P., **Han, A. L**., 2020, "Machining Parameter Optimization of EVA Foam Orthotic Shoe Insoles", *International Journal of Engineering and Technology*, Vol. 10(3), Pp. 179-190.
https://doi.org/10.46604/ijeti.2020.5099
6. Nuroji., Hung, C. C., Prasetya, B. H., **Han, A. L**., 2020, "The Behavior of Reinforced Concrete Members with Section Enlargement Using Self-Compacting Concrete", *International Review of Civil Engineering*, Vol. 11(3), Pp. 121-126.
https://doi.org/10.15866/irece.v11i3.18574
7. Haryanto, Y., Hu, H. T., **Lie, H. A**., Atmajayanti, A. T., Galuh, D. L. C., Hidayat, B. A., 2019, "Finite Element Analysis of T-Section RC Beams Strengthened by Wire Rope in The Negative Moment Region With an Addition of Steel Rebar at The Compression Block", *Jurnal Teknologi*, Vol. 81(4), Pp. 143-154.
8. Maryoto, A., **Aylie, H**., Wariyatno, N.G, 2018, "The Live Load Capacity of Rectangular Precast Reinforced Concrete Stick Plates", *International Review of Civil Engineering*, Vol. 9(5), Pp. 174-180.
https://doi.org/10.15866/irece.v9i5.15542
9. Jamari, J., **Han, A. L**., Saputra, E., Anwar, I. B., van der Heide, E., 2018, "The Effect of Additional Layer Between Liner and PMMA on Reducing Cracks of Cement Mantle Hip Joints", *International Journal of Engineering and Technology Innovation*, Vol. 8(2), Pp. 99-106.
http://ojs.imeti.org/index.php/IJETI/article/view/1884
10. Tudjono, S., **Han A. L**., Gan, B. S., 2018, "An Integrated System for Enhancing Flexural Members' Capacity via Combinations of the Fiber Reinforced Plastic Use, Retrofitting, and Surface Treatment Techniques", *International Journal of Technology*, Vol. 9(1), Pp. 1-15.
https://doi.org/10.14716/ijtech.v9i1.298

**b) Prosiding Internasional Terindeks Scopus**

1. Wariyatno, N.G., Haryanto, Y., **Han, A.L**., Gan, B.S., Sudibyo, G.H., 2020, "Load-carrying capacity and failure mode of composite steel-concrete truss element under monotonic loading", *IOP Conference Series: Materials Science and Engineering*, Vol. 982(1), Pp. 1-6.
https://doi.org/10.1088/1757-899X/982/1/012032
2. Qomaruddin, M., **Han A. L**., Hidayat, A., Sudarno., Kustirini, A., 2019, "Compressive Strength Analysis on Geopolymer Paving by Using Waste Substitution of Carbide Waste and Fly Ash", *Journal of Physics: Conference Series*, Vol. 1424, Pp. 1-6.https://doi.org/10.1088/1742-6596/1424/1/012052
3. Kiryu, S., Alisjahbana, S. W., Alisjahbana, I., **A. L. Han**, Gan, B. S., 2019, "Free Vibration of Orthotropic Levy-Type Solution Plates by Using SEM", *IOP Conference Series: Materials Science and Engineering*, Vol. 615, Pp. 1-8. https://doi.org/10.1088/1757-899X/615/1/012081
4. Ekaputri, J. J., **Lie, H. A**., Fujiyama, C., Shovitri, M., Alami, N. H., Setiamarga, D. H. E., 2019, "The Effect of Alkali Concentration on Chloride Penetration in Geopolymer Concrete", *IOP Conference Series: Materials Science and Engineering*, Vol. 615, Pp. 1-12.
https://doi.org/10.1088/1757-899X/615/1/012114
5. Hidayat, B. A., Hu, H. T., **A. L. Han.**, Haryanto, Y., Widyaningrum, A., Pamudji, G., 2019, "Nonlinear Finite Element Analysis of Traditional Flexural Strengthening Using Betung Bamboo (Dendrocalamus

Asper) on Concrete Beams", *IOP Conference Series: Materials Science and Engineering*, Vol. 615, Pp. 1-8. https://doi.org/10.1088/1757-899X/615/1/012073

6. Hardjasaputra, H., Cornelia, M., Gunawan, Y., Surjaputra, I. V., **Lie, H. A.**, Rachmansyah, Pranata Ng, G., 2019, "Study of mechanical properties of fly ash-based geopolymer concrete", *IOP Conference Series: Materials Science and Engineering*, Vol. 615, Pp. 1-9. https://doi.org/10.1088/1757-899X/615/1/012009
7. **Han, A. L.**, Setiawan, H., Hajek, P., 2019, "Laboratory Concrete Specimens Waste, a Case Study on Life Cycle Assessment", *IOP Conference Series: Earth and Environmental Science*, Vol. 290(1), Pp. 1-7. https://doi.org/10.1088/1755-1315/290/1/012015
8. Harijanto, S., Ervianto, W, I., **Lie, H. A.**, 2019, "Green Construction Capability Model (GCCM) for Contracting Companies", *IOP Conference Series: Earth and Environmental Science*, Vol. 290(1), Pp. 1-7. https://doi.org/10.1088/1755-1315/290/1/012159
9. **Han, A.L**., Gan, B.S., Budipriyanto, A., 2018, "Shear-bond behavior of fiber reinforced polymer (FRP) rods and sheets", *MATEC Web of Conferences* Vol. 195, Pp. 1-7. https://doi.org/10.1051/matecconf/201819502001
10. Purwanto, **Han, A.L**., Nuroji, Jaya Ekaputri, J., 2018, "The influence of molarity variations to the mechanical behavior of geopolymer concrete", *MATEC Web of Conferences* Vol. 195, Pp. 1-9. https://doi.org/10.1051/matecconf/201819501010
11. Kiryu, S., **Han, A.L**., Nurhuda, I., Gan, B.S, 2018, "Analysis of steel reinforced functionally graded concrete beam cross sections", *MATEC Web of Conferences* Vol. 195, pp. 1-8. https://doi.org/10.1051/matecconf/201819502031
12. Setiawan, Y., **Han, A.L**., Sthenly Gan, B., Utomo, J., 2018, "Numerical analysis of castellated beams with oval openings", *MATEC Web of Conferences* Vol. 195, pp. 1-9. https://doi.org/10.1051/matecconf/201819502008

**c) Jurnal Nasional Terakreditasi**

1. Setiadji, B. H., Dewabrata, H., **Ay Lie, H**., & Subagyo, S. A. P., 2020, "Studi Penggunaan Semen Slag sebagai Substitusi Semen Portland pada Beton". *Siklus : Jurnal Teknik Sipil*, Vol. 6(2), Pp. 117 - 128. https://doi.org/10.31849/siklus.v6i2.4595
2. Setiawan, H., Raharjo, F., & **Han, A.L**., 2020, "An Innovation Value Chain in Project Based Companies: A Study of Indonesian Contractors", *Civil Engineering Dimension*, Vol. 22(2), Pp.101-108. https://doi.org/10.9744/ced.22.2.98-104
3. Eratodi, I. G. L. B., Awaludin, A., **Han, A. L**., Triwiyono, A., 2020, "Kajian dan Evaluasi Struktur Slab Prestressed Precast Modular Concrete", *Media Komunikasi Teknik Sipil*, Vol. 26(1), Pp. 44-51 https://doi.org/10.14710/mkts.v26i1.27765
4. Haryanto, Y., Hu, H. T., **Han, A. L**., Hidayat, B. A., Widyaningrum, A., Yulianita, P.E., 2020, "Seismic Vulnerability Assessment Using Rapid Visual Screening: Case Study of Educational Facility Buildings of Jenderal Soedirman University, Indonesia", *Civil Engineering Dimension*, Vol. 22(1), Pp. 13-21. https://doi.org/10.9744/ced.22.1.13-21
5. Utomo, J., Ekaputri, J. J., Antonius, **Han A. L.**, 2019, "Evaluasi Kinerja Seismik Rangka Beton Pemikul Momen Khusus dengan PERFORM-3D", *Media Komunikasi Teknik Sipil*, Vol. 25(1), Pp. 27-37. https://doi.org/10.14710/mkts.v25i1.19310
6. Wariyatno, N. G., **Han, A. L**., Gan, B. S, 2019, "Proposed Design Philosophy for Seismic-Resistant Buildings", *Civil Engineering Dimension*, Vol. 21(1), Pp. 1-5. https://doi.org/10.9744/ced.21.1.1-5
7. Christhy Amalia Sapulete, **Han Ay Lie**, Yulita Arni Priastiwi., 2018, "Sustainability Beton Metode Life Cycle Assessment Studi Kasus: Limbah Beton Laboratorium Bahan dan Konstruksi Departemen Teknik Sipil Universitas Diponegoro Semarang", *Media Komunikasi Teknik Sipil*, 24 (2), Pp. 140-147. https://doi.org/10.14710/mkts.v24i2.18863

8. Benny Suryanto, R. Morgan, **A.L. Han**, 2016, "Predicting the Response of Shear-critical Reinforced Concrete Beams using Response-2000 and SNI 2847:2013", *Civil Engineering Dimension*, Vol. 18(1), Pp. 1-5. https://doi.org/10.9744/ced.18.1.16-24

9. Tudjono, S., **Han, A.L.,** As'ad, S., 2016, "Reinforced Concrete Finite Element Modeling Based on the Discrete Crack Approach", *Civil Engineering Dimension, Journal of Civil Engineering and Applied Science*, Vol. 18(2), Pp. 72–77. https://doi.org/10.9744/ced.18.2.72-77

Semarang, February 2021

Prof. Dr. Ir. Han Ay Lie, M.Eng.
NIP. 19561109 198503 2 002

**MEMBER 2**

**Identitas Diri**

| | |
|---|---|
| Nama Lengkap | : Bagus Hario Setiadji, ST., MT., Ph.D |
| NIP | 197205102001121001 |
| Tempat, Tanggal Lahir | : Yogyakarta, 10 Mei 1972 |
| Jabatan Akademik | : Lektor Kepala |
| Jenis Kelamin | : Laki-laki |
| Pangkat/Golongan | : Pembina/IV-a |
| Unit Kerja | : Departemen Teknik Sipil Fakultas Teknik Universitas Diponegoro |
| Alamat Kantor | : Jl. Prof. Soedarto, SH, Tembalang, Semarang 50275, Telp: 024-7474770 |
| Email | : bhsetiadji@ft.undip.ac.id |
| Alamat | : Jl. Gondang Timur 4 no. 29 Tembalang Semarang 50277 |
| Telp | : 024-7474770 / 024-7460060 |

**Profil Akademik**

- Scopus ID : 57170622600 (Bagus Hario Setiadji, *h*-index: 4)
  https://www.scopus.com/authid/detail.uri?authorId=57170622600
- Sinta ID : 6029045 (Bagus Hario Setiaji)
  https://sinta.ristekbrin.go.id/authors/detail?id=6029045&view=overview
- Google Scholar : Bagus Hario Setiadji
  https://scholar.google.com/citations?hl=en&user=r8JDbHMAAAAJ
- Research Gate : Bagus Hario Setiadji
  https://www.researchgate.net/profile/Bh_Setiadji
- Web of Science ResearchID : M-9437-2019 (Bagus Hario Setiadji, h-index: 3)
  https://publons.com/researcher/2904034/bagus-hario-setiadji/

**Riwayat Pendidikan**

| Tahun Lulus | Jenjang | Sekolah/Perguruan Tinggi | Jurusan/Bidang Studi |
|---|---|---|---|
| 1996 | S1 | Institut Teknologi Bandung | Teknik Sipil |
| 2000 | S2 | Institut Teknologi Bandung | Sistem dan Teknik Jalan Raya |
| 2010 | S3 | National University of Singapore | Highway Engineering |

**Pengalaman Organisasi dan Struktural**

| No | Organisasi | Jabatan | Tahun |
|---|---|---|---|
| 1 | BAB 2Anggota Masyarakat Transportasi Indonesia (MTI) Jawa Tengah | Ketua | 2019 |
| 2 | Anggota Forum Studi Transportasi Perguruan Tinggi (FSTPT) | Anggota | 2002 |
| 3 | Anggota Himpunan Pengembang Jalan Indonesia (HPJI) | Anggota | 2017 |
| 4 | Kepala Program Studi S1 Teknik Sipil Universitas Diponegoro | Kepala | 2016 |

**Riwayat Kepangkatan dan Jabatan**

**c. Riwayat Kepangkatan**

| No | Pangkat/Golongan | TMT |
|---|---|---|
| 1 | Penata Muda Tk. I / III B | 1 Januari 2003 |
| 2 | Penata / III C | 1 Oktober 2015 |
| 3 | Penata Tk. I / IIID | 1 Oktober 2017 |
| 4 | Pembina / IV A | 1 Oktober 2019 |

**d. Riwayat Jabatan Akademik / Fungsional**

| No | Pangkat/Golongan | Tahun |
|---|---|---|
| 1 | Asisten Ahli | 2006 |
| 2 | Lektor Muda | - |
| 3 | Lektor Madya | 2015 |
| 4 | Lektor Kepala | 2019 |

**Penghargaan**

| Tahun | Penghargaan |
|---|---|
| 2015 | Outstanding Reviewer dari American Society of Civil Engineers (ASCE) |
| 2016 | Best Paper pada the 10th Asia Pacific Conference on Transportation and the Environment (APTE) di Kuala Lumpur, Malaysia dengan judul paper: Effect of Different Fractal Dimension of Various RAP Blends on Mixture Performance |
| 2017 | Satyalancana Karya Satya 10 tahun |
| 2017 | Dosen Berkinerja Baik dalam Publikasi pada Jurnal Internasional Bereputasi Semester I Tahun 2017 |

**Pengalaman Penelitian**

| No. | Judul Penelitian | Sumber Dana (Rp) | Kedudukan dalam Penelitian | Tahun |
|---|---|---|---|---|
| 1. | Reformulasi Analisis Perhitungan Balik pada Pedoman Desain Overlay Pd T-1-2002-B (Penelitian Dasar Hibah Bersaing) | Dana DIPA Fakultas Teknik Undip | Ketua | 2015 |
| 2. | Hubungan antara Panjang Work-zone dan Durasi Waktu Siklus Sistem Buka Tutup (Penelitian Dasar Hibah Bersaing) | Dana DIPA Fakultas Teknik Undip | Anggota | 2015 |
| 3. | Evaluasi Gradasi Campuran Beraspal Daur Ulang Menggunakan Teori Fractal (Penelitian Dasar Hibah Bersaing) | Dana DIPA Fakultas Teknik Undip | Ketua | 2016 |
| 4. | Pengembangan Algoritma Perhitungan Balik pada Perkerasan Lentur Dua Lapisan (Penelitian Inovatif Hibah Bersaing) | Dana DIPA Fakultas Teknik Undip | Ketua | 2016 |
| 5. | Pengembangan Metode Penilaian Kerusakan dan Kegagalan Perkerasan Jalan Akibat Bencana Banjir (Riset Pengembangan dan Penerapan Universitas Diponegoro) | Riset Pengembangan dan Penerapan Universitas Diponegoro | Anggota | 2016 |
| 6. | Pengembangan Model Perhitungan Balik Gradasi Agregat Menggunakan Teori Fractal (Penelitian Dasar Hibah Bersaing) | Dana DIPA Fakultas Teknik Undip | Ketua | 2017 |
| 7. | Pengkinian Indeks Kerusakan Permukaan untuk Evaluasi Kerusakan Retak pada Perkerasan Lentur (Penelitian Hibah Strategis) | Dana DIPA Fakultas Teknik Undip | Ketua | 2018 |

| | | | | |
|---|---|---|---|---|
| 8. | Evaluasi Indeks Kerusakan Permukaan Jalan untuk Kerusakan Lubang dan Alur pada Perkerasan Lentur (Penelitian Hibah Strategis) | Dana DIPA Fakultas Teknik Undip | Ketua | 2019 |
| 9 | Optimalisasi Gradasi Agregat Berdasarkan Spesifikasi Campuran Beraspal (Penelitian Hibah Strategis) | Dana DIPA Fakultas Teknik Undip | Ketua | 2020 |

**Publikasi**

**d) Jurnal Internasional Terindeks Scopus**

1. Javed, F., Setiadji, B.H. and Fwa, T.F. (2015), Effect of Proportion of Missing Data on Application of Data Imputation in PMS, Journal of Transportation Research Record, Vol. 2523, pp. 21-31, doi: 10.3141/2523-03, Q2 Quartile Journal (2014), SJR Impact Factor: 0.47.
2. Suseno, Y.H., Wibowo, M.A. and Setiadji, B.H. (2015), Risk Analysis of BOT Scheme on Post-Construction Toll Road, Procedia Engineering, Vol. 125, pp. 117-123, doi:10.1016/j.proeng.2015.11.018, SJR Impact Factor: 0.24
3. Ariawan, I.M.A., Subagio, B.S. and Setiadji, B.H. (2015), Development of Asphalt Pavement Temperature Model for Tropical Climate Conditions in West Bali Region, Procedia Engineering, Vol. 125, pp. 474-480, doi:10.1016/j.proeng.2015.11.018, SJR Impact Factor: 0.24
4. Setiadji, B.H. and Supriyono (2016), Evaluation of Proposed Backcalculation Procedure in Indonesia Overlay Design Guide, *accepted for publication in Procedia Engineering,* SJR Impact Factor: 0.24
5. Radam, I.F., Mulyono, A.T. dan Setiadji, B.H. (2016), The Analysis of Lifestyle Affecting the Choice on River Transport in Banjarmasin, *Journal of International Business Management*, Vol. 10, Issue 19, pp. 4690-4698, DOI: 10.3923/ibm.2016.4690.4698, Q4 Quartile Journal (2015), SJR Impact Factor: 0.13
6. Sodikin, Munawar, A. dan Setiadji, B.H. (2016), The Use of Modified Emoticon Symbols for the Design of Traffic Warning Signs, Research Journal of Applied Sciences, Vol. 11, Issue 8, pp. 667-670, DOI: 10.3923/rjasci.2016.667.670, Q4 Quartile Journal (2015), SJR Impact Factor: 0.14
7. Setiadji, B.H., Utomo, S., and Nahyo (2017), Effect of Chemical Compounds in Tidal Water on Asphalt Pavement Mixture, accepted for publication in International Journal of Pavement Research and Technology. http://dx.doi.org/10.1016/j.ijprt.2016.11.002, Q2 Quartile Journal (2015), SJR Impact Factor: 0.59
8. Setiadji, B.H. and Supriyono (2017), Evaluation of Proposed Backcalculation Procedure in Indonesia Overlay Design Guide, Procedia Engineering, Vol. 171, pp. 1405-1412, doi.org/10.1016/j.proeng.2017.01.456, SJR Impact Factor: 0.24
9. Yunianta, A., Suripin and Setiadji, B.H. (2019), Design of Sustainable Road Drainage System Model, Journal of Sustainable Engineering: Proceedings Series, Vol 1 No 1 (2019), DOI: https://doi.org/10.35793/joseps.v1i1.5
10. Setiadji, B.H., Purwanto, D., Wicaksono, Y.I. (2020), Improvement of Potholes and Rutting Assessment in Surface Distress Index, Advances in Engineering Research series, Atlantis Press, DOI: https://doi.org/10.2991/aer.k.200220.034

**e) Prosiding Internasional Terindeks Scopus**

1. Setiadji, B.H., Wardani, S.P.R, and Perdana, S. (2014), Durability of Road Pavement against Tidal Inundation, *Proceedings of the 9th Asia Pacific Conference on Transportation and the Environment (APTE)*, Colombo, Sri Lanka
2. Wardani, S.P.R, Setiadji, B.H., Wuryanto, H. and Zaki, M. (2014), The Integration of Climate Changes Adaptation and Mitigation in Sustainability Concept, *Proceedings of International Seminar on Road Sustainability and Green Technology*, Denpasar, Bali.

3. Setiadji, B.H., Supriyono, and Suwarto, F. (2016), Effect of Different Fractal Dimension of Various RAP Blends on Mixture Performance, *Proceedings of the 10th Asia Pacific Conference on Transportation and the Environment (APTE)*, Kuala Lumpur, Malaysia.

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5. Hatmoko, J.U.D, Setiadji, B.H. dan Wibowo, M.A. (2017), Evaluasi Pengaruh Banjir, Beban Berlebih dan Mutu Konstruksi pada Pengembangan Kriteria Kegagalan Konstruksi Jalan, *Jurnal Transportasi*, FSTPT, Vol. 17, No. 2, pp. 89-98, ISSN: 1411-2442.

6. Rakhmatika, Setiadji, B.H. dan Riyanto, B. (2017), Penentuan Urutan Prioritas Penanganan Pemeliharaan Jembatan Ruas Jalan Nasional di Pulau Bangka Provinsi Kepulauan Bangka Belitung, *Jurnal Media Komunikasi Teknik Sipil*, Vol. 23, No. 1, pp. 38-47, doi.org/10.14710/mkts.v23i1.12870.

7. Setiadji, B.H. and Supriyono (2017), Closed-form Backcalculation Algorithm for Indonesia Overlay Design Procedure, *Proceedings of 10th International Conference on Road and Airfield Pavement Technology*, Hong Kong.

8. Yunianta, A., Suripin and Setiadji, B.H. (2017), Sustainable Road Drainage System: Experimental Model, *accepted for Proceedings of the 1st International Symposium on Transportation Studies in Developing Countries* (ISTSDC), Makassar, Indonesia.

9. Setiadji, B.H., Supriyono and Purwanto, D. (2018), Development of Backcalculation Model for Aggregate Gradation Determination Using Fractal Theory, *Proceedings of the 2nd International Joint Conference on Advance Engineering and Technology (IJCAET 2017*) (Bali, Indonesia) published in MATEC Web of Conference, Volume 159, DOI: https://doi.org/10.1051/matecconf/201815901006

10. Setiadji, B.H. (2018) Application of Deflection Bowl Parameters for Assessing Different Structures of Road Pavement, accepted for publication *in Proceedings of the 4th International Conference on Rebilitation and Maintenance in Civil Engineering (ICRMCE)*, Solo.

11. Setiadji, B.H. (2019), Proposed SDI Equations to Improve the Effectiveness in Evaluating Crack Damage on the Road Pavement, *IOP Conference Series: Materials Science and Engineering*, Volume 650, Number 1

12. Sodikin, Munawar, A. and Setiadji, B.H. (2019), Sensitivity of Car-Followers to Moving Warning Sign, *Advances in Engineering Research*, Atlantis Press, ISBN: 978-94-6252-812-3

13. Setiadji, B.H. and Supriyono (2019), The Use of Deflection Bowl Parameters to Represent the Carrying Capacity of Pavement Structures, *IOP Conference Series: Materials Science and Engineering*, Volume 615 (2019), DOI:10.1088/1757-899X/615/1/012130

14. Setiadji, B.H., Supriyono and Purwanto, D. (2019), Surface Distress Index Updates to Improve Crack Damage Evaluation, *Advances in Engineering Research*, Atlantis Press, DOI: https://doi.org/10.2991/apte-18.2019.10

15. Adistirani, Riyanto, B. and Setiadji, B.H. (2019), Analysis of Kendal Ferry Terminal Performance, *IOP Conference Series: Earth and Environmental Science*, Volume 328 (2019), DOI: 10.1088/1755-1315/328/1/012009

16. Setiadji, B.H., Wardani, S.P.R. Azizah, K.P. (2020), Laboratory Analysis of the Effect Of Sulfate in Tidal Water on the Performance of Asphalt Mixture, Engineering, Information and Agricultural Technology in the Global Digital Revolution, CRC Press, ISBN: 978-0-429-32223-5 (eBook), DOI: https://doi.org/10.1201/9780429322235

17. Niyomukiza, J.B., Wardani, S.P.R., and Setiadji, B.H., (2020), The Influence of Keruing Sawdust on the Geotechnical Properties of Expansive Soils, *IOP Conference Series: Earth and Environmental Science*, Vol. 448, 012040, doi:10.1088/1755-1315/448/1/012040

18. Niyomukiza, J.B., Wardani, S.P.R, Setiadji, B.H. (2021), Recent advances in the stabilization of expansive soils using waste materials: A review, *IOP Conference Series: Earth and Environmental Science*, 623 012099, doi:10.1088/1755-1315/623/1/012099

**c) Jurnal Nasional Terakreditasi**

1. Wardani, S.P.R, Suripin, Soebroto, Muhrozi, dan Setiadji, B.H. (2015), Sistem Drainase pada Jalan Pantura: Permasalahan dan Alternatif Solusi, *Seminar Nasional Teknik Jalan ke-3, Himpunan Pengembang Jalan Indonesia (HPJI*), Semarang.
2. Prasetyo, S.C., Hatmoko, J.U.D, dan Setiadji, B.H. (2016), Model Sistem Peringkat untuk Penilaian Kinerja Lingkungan pada Proyek Konstruksi Jalan, *Jurnal Transportasi, FSTPT*, Vol. 16, No. 3, pp. 213-222, ISSN: 1411-2442
3. Setiadji, B.H., Dewabrata, H., Ay Lie, H, Subagyo, S.A.P (2020), Studi Penggunaan Semen Slag sebagai Substitusi Semen Portland pada Beton, Siklus: *Jurnal Teknik Sipil*, 6(2), pp. 117-128, https://doi.org/10.31849/siklus.v6i2.4595

**Pelatihan/workshop :**

| | | |
|---|---|---|
| Waktu | : | 2004 |
| Nama workshop | : | Overseas internship under Technological and Professional Skills Development Sector Project (TPSDP) |
| Penyelenggara | : | Department of Civil Engineering, National University of Singapore (NUS) |
| Waktu | : | 2010 |
| Nama workshop | : | Workshop Evaluasi dan Rehabilitasi Jalan Beton |
| Penyelenggara | : | PT. Adhi Karya (Persero) Tbk. |
| Waktu | : | 2013 |
| Nama workshop | : | Certified Training on Advanced Pavement Technology |
| Penyelenggara | : | Pusat Penelitian Jalan dan Jembatan (Pusjatan), Kementerian Pekerjaan Umum |
| Waktu | : | 2014 |
| Nama workshop | : | From Design to Maintenance Long Life Pavement |
| Penyelenggara | : | Himpunan Pengembang Jalan Indonesia (HPJI) |
| Waktu | : | 2018 |
| Nama workshop | : | Workshop on Asphalt Pavement Technology |
| Penyelenggara | : | Pusat Litbang Jalan dan Jembatan Kementerian Pekerjaan Umum dan Perumahan Rakyat bekerja dan ExxonMobil Research and Engineering |
| Waktu | : | 2021 |
| Nama workshop | : | Pelatihan Pembelajaran Berbasis Studi Kasus dan SCL |
| Penyelenggara | : | Lembaga Pengembangan dan Penjaminan Mutu Pendidikan (LP2MP) Undip |

Semarang, February 2021

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**MEMBER 3**

**Identitas Diri**

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| Tempat, Tanggal Lahir | : Klaten, 09 Juni 1972 |
| Jabatan Akademik | : Guru Besar |
| Jenis Kelamin | : Laki-laki |
| Pangkat/Golongan | : Pembina/IV-b Pembina |
| Unit Kerja | : Departemen Teknik Kimia Fakultas Teknik Universitas Diponegoro |
| Alamat Kantor | : Jl. Prof. Soedarto, SH, Tembalang, Semarang 50275, Telp: 024-7474770 |
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| Telp | 081329163105 |

**Profil Akademik**

- Scopus ID : 57218625125 (Widayat, *h*-index: 8)
  https://www.scopus.com/authid/detail.uri?authorId=57218625125
- Sinta ID : 5054 (Widayat)
  https://sinta.ristekbrin.go.id/authors/detail?id=5054&view=overview
- Google Scholar: Widayat (*h*-index: 12)
  https://scholar.google.com/citations?user=J8OWyRoAAAAJ&hl=id&oi=ao
- Research Gate : Widayat
  https://www.researchgate.net/profile/Widayat-Widayat

**Riwayat Pendidikan**

| Tahun Lulus | Jenjang | Sekolah/Perguruan Tinggi | Jurusan/Bidang Studi |
|---|---|---|---|
| 1996 | S1 | Universitas Diponegoro | Teknik Kimia |
| 2002 | S2 | Institute Teknologi Bandung | Teknik Kimia |
| 2011 | S3 | Institute Teknologi Sepuluh November | Teknik Kimia |

**Penghargaan**

| No | Bentuk Penghargaan | Pemberi | Tahun |
|---|---|---|---|
| 1 | Piagam Penghargaan No. 861/47753 | Kepala Dinas Pendidikan dan Kebudayaan Propinsi Jawa Tengah | 2005 |
| 2 | National Seminar on Research and Studies VI: Teaching Grant | Project Director TPSDP Direktorat Jenderal Pendidikan Tinggi | 2006 |
| 3 | Dosen Teladan TK III Fakultas Teknik UNDIP | Universitas Diponegoro Semarang | 2006 |
| 4 | National Seminar on Research and Studies VIII: Teaching Grant | Project Director TPSDP Direktorat Jenderal Pendidikan Tinggi | 2007 |
| 5 | Penyaji terbaik Pengabdian kepada Masyarakat | Direktur DP3M DIKTI | 2008 |
| 6 | Prestasi akademik yang telah dicapai selama belajar di ITS dengan predikat Cumlaude | Rektor ITS Nomor. 10391/IT2/PP/2011 | 2011 |
| 7 | Satya Lancana 10 Tahun | Presiden RI | 2012 |

**Pengalaman Organisasi dan Struktural**

| No | Organisasi | Jabatan | Tahun |
|---|---|---|---|
| 1 | PS PPI FT Undip | Ketua Prodi | 2017-sekarang |
| 2 | Pusat Kajian Halal Undip | Ketua | 2018-sekarang |
| 3 | UPT. Lab Terpadu UNDIP Semarang | Kabid Instrumentasi dan Analisis, UPT Lab Terpadu | 2013- 2014 |
| 4 | Jurusan Teknik Kimia UNDIP | Ketua Lab. Pendidikan Teknik Kimia 2 | 2012-2016 |
| 5 | Jurusan Teknik Kimia UNDIP | Ketua Bidang Pengembangan Web dan Sistem Akademik Jurusan | 2011 - 2014 |
| 6 | UPT Lab Terpadu UNDIP Semarang | Ketua Tim Analis UPT Lab Terpadu | 2014 -2016 |
| 7 | UPT Lab Terpadu UNDIP Semarang | Ketua Tim Pengadaan Alat Laboratorium | 2012 |
| 8 | UPT Lab Terpadu UNDIP Semarang | Ketua Tim Pengadaan Alat Laboratorium | 2015 |
| 9 | Jurusan Teknik Kimia Undip | Ketua Dewan Penyunting Reaktor (Jurnal Nasional Terakreditasi) | 2014 -2016 |
| 10 | DIKTI | Reviewer PKM | 2006 -2007 |
| 11 | LPPM | Reviewer Penelitian dan Pengabdian | 2011 – 2016 |
| 12 | LPDP | Reviewer Seleksi Beasiswa | 2011 – 20014 |
| 13 | Jurusan Teknik Kimia Undip | Sekretaris Lab Mikrobiologi Industri | 2002 - 2007 |
| 14 | Jurusan Teknik Kimia, Universitas Diponegoro Semarang, | Staf Peneliti pada Laboratorium Teknik Kimia II | 1998 – 1999 |
| 15 | Jurusan Teknik Kimia, Universitas Diponegoro Semarang, | Koordinator Pelaksana Laboratorium Teknik Kimia I, | 1998 – 1999 |
| 16 | PT Unggul Indah Corporation, Merak | Supervisor Project UAB III, | 1998-1998 |
| 17 | PT. Unggul Indah Corporation, Merak | Supervisor Plant PACOL | 1997-1998 |
| 18 | Jurusan Teknik Kimia Universitas Diponegoro Semarang | Asisten Laboratorium Teknik Kimia/ Proses Kimia | 1994-1996 |
| 19 | Indonesia Journal of Halal | Ketua Dewan Penyunting | 2018-sekarang |
| 20 | Konsorsium Halal Jawa Tengah | Ketua | 2017-sekarang |
| 21 | MKICS | Anggota | 2007 –sekarang |
| 22 | HKBAI | Anggota | 2007 - sekarang |
| 23 | BKK PII | Anggota /Tim Pengabdian | 2011-2012 |

**Pengalaman Pengembangan Keahlian/Riset**

| No | Judul Riset | Institusi Penyelenggara Riset | Tahun |
|---|---|---|---|
| 1 | Carbonyl Compounds Generated From The Non-Enzymatic Browning Reactions Of Lysin With Reducing Sugars To Scavenge Food's Off-Flavor : Application In Emergency Food Kit | Anggota/Internal UNDIP | 2020 |
| 2 | Proses Produksi Gas Hidrogen Dengan Proses Elektrolisis Dari Limbah Padat Yang Mengandung Aluminium | Ketua/ Internal Fakutas Teknik UNDIP | 2020 |
| 3 | Mie Sehat dengan Substitusi Tepung Mocaf dan Fortifikasi Spirulina untuk Diversifikasi Produk | Anggota/Internal UNDIP | 2020 |

| No | Judul Riset | Institusi Penyelenggara Riset | Tahun |
|---|---|---|---|
| 4 | Pengolahan Limbah Padat Industri Geothermal menjadi Katalis Nano yang berpotensi dalam sintesis Biohidrogen | Ketua/Kemenristekdikti | 2020 |
| 5 | Proses Kultivasi Mikroalga yang memiliki Ketahanan tinggi terhadap Karbondioksida | Ketua/Internal UNDIP | 2020 |
| 6 | The development of bioflocculation technology in enhancing microalgae harvesting and nutrient removal from wastewater effluent | Anggota/Internal UNDIP | 2020 |
| 7 | Production Of High Grade Biodiesel From Microalgae As Renewable Fuel Using Combination Of Pyrolysis Reactor And Nano-Hybrid Membrane | Anggota/Internal UNDIP | 2019 |
| 8 | Mie Sehat dengan Substitusi Tepung Mocaf dan Fortifikasi Spirulina untuk Diversifikasi Produk | Anggota/Internal UNDIP | 2019 |
| 9 | Pembuatan Biodiesel dari Minyak Goreng Bekas dengan Memanfaatkan Panas Matahari sebagai Intensifikasi Proses menggunakan SFC Curve | Ketua/Internal UNDIP | 2019 |
| 10 | Carbonyl Compounds generated from the non-enzimatic browning reaction of lysin with reducing sugars to scavenge food's off-falvor | Anggota/Internal UNDIP | 2019 |
| 11 | Deacetylated Glucomannan as Anencapsulant of Vitamin C Using Gelation Method | Anggota/internal Fakultas Teknik UNDIP | 2019 |
| 12 | Pengembangan Proses Pengolahan Tanaman Jahe menjadi Produk Makanan dan Minuman menuju Proses *Zero Waste* | Ketua Penelitian Strategis Nasional Kemenristekdikti | 2018 |
| 13 | Pengembangan Proses Produksi Hidrogen Dari Limbah Cair Industri Biodiesel Dengan Proses *Steam Reforming* | Ketua RPP PNBP UNDIP | 2018 |
| 14 | Pengembangan Proses Pengolahan Tanaman Jahe menjadi Produk Makanan dan Minuman menuju Proses *Zero Waste* | Ketua Penelitian Strategis Nasional Kemenristekdikti | 2017 |
| 15 | Pengembangan Produksi Biodiesel Dengan Umpan Multi Stock Dengan Proses Berbantukan Gelombang Ultrasonik Dan Katalis Heterogen | Ketua HIKOM Lanjutan /DIKTI | 2017 |
| 16 | Pengembangan Proses Produksi Hidrogen Dari Limbah Cair Industri Biodiesel Dengan Proses *Steam Reforming* | Ketua RPP PNBP UNDIP | 2017 |
| 17 | Pengembangan Produksi Biodiesel Dengan Umpan Multi Stock Dengan Proses Berbantukan Gelombang Ultrasonik Dan Katalis Heterogen | Ketua HIKOM Lanjutan /DIKTI | 2016 |
| 18 | Pengembangan Proses Produksi Hidrogen Dari Limbah Cair Industri Biodiesel Dengan Proses *Steam Reforming* | Ketua RPP PNBP UNDIP | 2016 |
| 19 | Pembuatan Biodiesel Kualitas Tinggi dengan Proses Ekstraksi dilanjutkan dengan Esterifikasi dan Transesterifikasi | Ketua DIPA UNDIP | 2016 |
| 20 | Pengembangan Produksi Biodiesel Dengan Umpan Multi Stock Dengan Proses Berbantukan Gelombang Ultrasonik Dan Katalis Heterogen | Hibah Kompetensi DP2M DIKTI | 2015 |
| 21 | Proses Esterfikasi Gliserol Dengan Asam Benzoat Dengan Katalis Asam Sulfat | Jurusan Teknik Kimia FT Undip | 2015 |
| 22 | Peningkatan Produksi Biomasa Mikroalga Dalam Open Pond dan Pemanfaatannya Sebagai Sumber Pangan Alternatif dan Fortifikasi Pangan | MP3EI DP2M DIKTI | 2015 |
| 23 | Pembuatan Dan Karakterisasi Ultra Thin Hybrid Membran Anti Fouling Untuk Pengolahan Air Terproduksi Sebagai Sarana Peningkatan Produksi Minyak Dan Gas Bumi | Penelitian Unggulan PT DP2M DIKTI | 2015 |
| 24 | Pengembangan Katalis Berbasis Zeolit untuk Proses Produksi BioFuels dari Berbagai Minyak Nabati | Hibah IPTEKS DP2M DIKTI | 2014 |
| 25 | Development of Biodiesel Production from Vegetable Oil With Direct Utrasonics Assisted | DIPA UNDIP | 2013 |

| No | Judul Riset | Institusi Penyelenggara Riset | Tahun |
|---|---|---|---|
| 26 | Pengembangan Proses Produksi Biodiesel dari Bijih Karet Secara Insitu Berbantukan Gelombang Ultrasonik | DP2M DIKTI- Hibah Pascasarjana | 2012 |
| 27 | Pengembangan Proses Produksi Biodiesel Berbantukan Gelombang Ultrasonik dan Katalis Padat Berbasis Zeolit | DP2M DIKTI- Hibah Strategis Nasional | 2012 |
| 28 | Peningkatan Kualitas Eugenol dan Diversifikasi Produk sebagai Bahan Aditif Makanan | MP3EI DP2M DIKTI | 2012-2014 |
| 29 | Pengembangan Mata Kuliah Kewirausahaan Dalam Bidang Teknologi Pangan Berbasis Laboratorium | Litbang Diknas | 2011 |
| 30 | Studi Kinetika Reaksi Proses Produksi DiEtil Eter dari Bioetanol dengan Katalis H-Zeolit Berbasis Zeolit Alam | Dana DIPA Fak Teknik UNDIP | 2011 |
| 31 | Produksi mikroalga berbiomasa tinggi dalam photobioreaktor dan pemanfaatannya untuk biodiesel. | Penelitian Strategis Nasional DP2M DIKTI | 2010 |
| 32 | Pembuatan DiEtil Eter dari Etanol Hasil Fermentasi dengan Proses Reaktif Distilasi dan Katalis Heterogen Berbasis Zeolit: Upaya Penyelesaian Masalah Krisis Energi | HIBAH PASCA DP2M DIKTI | 2008-2010 |
| 33 | Development of Fluidized Bed Coating and Granulation Technology for Protection of Sensitive Liquids and Particles: Urea Particle Coating for Controlled Release | Penelitian Kerjasama Luar Negeri dan Publikasi Internasional DP2M DIKTI | 2010 |
| 34 | Production of Biodiesel by Ultrasound Assisted (Trans)Esterification of Rubberseed Oil | Advanced Research Dana DIPA Fak Teknik UNDIP | 2010 |
| 35 | Intensifikasi Proses Fermentasi Tekanan Vakum Dalam Bioreaktor Aliran Kontinyu Untuk Produksi Bioethanol | Dana DIPA Jurusan Teknik Kimia Fak Teknik UNDIP | 2010 |

**Publikasi Buku**

1. Teknologi proses produksi biodiesel (2013) EF Press Digimedia ISBN 978-602-18609-4-6
2. Matematika Teknik: Persamaan Diferensial Biasa. (2014) EF Press Digimedia ISBN 978-602-18609-7-7

**Publikasi Jurnal Ilmiah**

| No | Judul | Penerbit/Alamat Website Penerbit | Tahun |
|---|---|---|---|
| 1 | Effect of temperature and concentration of zeolite catalysts from geothermal solid waste in biodiesel production from used cooking oil by esterification–transesterification process | MDPI Multidisciplinary Digital Publishing Institute | 2020 |
| 2 | Geothermal industry waste-derived catalyst for enhanced biohydrogen production | Elsevier Journal Chemosphere | 2020 |
| 3 | Photochemical Oxidation Process of Copper from Electroplating Wastewater: Process Performance and Kinetic Study | Licensee MDPI Multidisciplinary Digital Publishing Institute Basel, Switzerland. Article number 1276 | 2020 |
| 4 | The characterization of physicochemical, microbiological and sensorial red ginger yogurt during fermentation | Food Research 4 (5) : 1753 - 1757 | 2020 |
| 5 | The Color Analysis of Noodle Made from Modified Cassava Flour | IOP Conference Series: Earth and Environmental Science | 2020 |
| 6 | Preparation of KI/Hydroxyapatite Catalyst from Phosphate Rocks and Its Application for Improvement of Biodiesel Production | MDPI Multidisciplinary Digital Publishing Institute, Molecules Journal | 2020 |
| 7 | UV irradiation and ozone treatment of κ-carrageenan: Kinetics and products characteristics | Bulletin of Chemical Reaction Engineering % catalysis | 2020 |

| No | Judul | Penerbit/Alamat Website Penerbit | Tahun |
|---|---|---|---|
| 8 | Biodiesel production from waste cooking oil by using zirconia catalyst | AIP Conference Proceedings | 2020 |
| 9 | Performance evaluation of modified nanohybrid membrane polyethersulfone-nano ZnO (PES-nano ZnO) using three combination effect of PVP, irradiation of ultraviolet and thermal for biodiesel purification. | Elsevier, Renewable EnergyVolume 148, April 2020, Pages 935-945 | 2020 |
| 10 | The effect of impregnated type at kaolin catalyst on biodiesel production from used cooking oil | AIP Conference Proceedings, 2020, 2197, 030009 | 2020 |
| 11 | Single-step purification of peroxidase enzyme from Horseradish (Raphanus sativus L.) | AIP Conference Proceedings, 2020, 2197, 080002 | 2020 |
| 11 | Fabrication and characterization of nano hybrid cellulose acetate-nanoTiO2/crosslinked polyvinyl alcohol coated membrane for crude clove oil purification | Periodica Polytechnica Chemical Engineering | 2020 |
| 12 | Waste cooking oil processing for fatty acid methyl ester and mono glycerides production with magnetite catalyst | Food Research | 2020 |
| 13 | *Analysis of piperine content in cabe jawa extracts (Piper retrofractum Vahl) using UV spectrophotometry and HPLC* | IOP Conference Series: Materials Science and Engineering | 2019 |
| 14 | *Improvement in nano-hybrid membrane PES–nanosilica performance using ultra violet irradiation and acetone–ethanol immersion for produced water treatment* | International Journal of Environmental Science and Technology, | 2019 |
| 15 | *Preparation of α-Fe2O3–Al2O3 catalysts and catalytic testing for biodiesel production* | *Materials Today: Proceedings,* | 2019 |
| 16 | *Liquid Waste Processing of Tofu Industry for Biomass Production as Raw Material Biodiesel Production* | *IOP Conference Series: Earth and Environmental Science*, | 2019 |
| 17 | *Improvement in nano-hybrid membrane PES–nanosilica performance using ultra violet irradiation and acetone–ethanol immersion for produced water treatment* | *International Journal of Environmental Science and Technology,* | 2019 |
| 18 | *Heat integration analysis of preliminary plant design of glycerol conversion into propylene glycol* | *International Journal on Engineering Applications* | 2019 |
| 19 | Study of Catalyst Variation Effect in Glycerol Conversion Process to Hydrogen Gas by Steam Reforming, Widayat, Hartono, R., Elizabeth, E., Annisa, A.N. | IOP Conference Series Materials Science and Engineering, 349(1),012070 | 2018 |
| 20 | A Review of Bio-lubricant Production from Vegetable Oils Using Esterification Transesterification Process, Annisa, A.N., Widayat, W. | MATEC Web of Conferences 156,06007 | 2018 |
| 21 | Synthesis and Characterization of Co/Ni/CoNi-ZSM-5 Catalyst for Hydrogen Production, Widayat, W., Nuur Annisa, A., Satriadi, H., Syaiful, S. | MATEC Web of Conferences 156,06013 | 2018 |
| 22 | Potential of L-fucose isolated from Brown Seaweeds as Promising Natural Emulsifier compare to Carboxymethyl Cellulose (CMC), Al-Baarri, A.N., Legowo, A.M., Widayat,, Desnasari, D., Santoso, I.P.M. | IOP Conference Series: Earth and Environmental Science 116(1),012005 | 2018 |

| No | Judul | Penerbit/Alamat Website Penerbit | Tahun |
|---|---|---|---|
| 23 | Determination Hypoiodous Acid (HIO) by Peroxidase System Using Peroxidase Enzyme , Al-Baarri, A.N., Legowo, A.M., Widayat, Yusuf, M., Demasta, E.K. | IOP Conference Series: Earth and Environmental Science 116(1),012043 | 2018 |
| 24 | The browning value changes and spectral analysis on the Maillard reaction product from glucose and methionine model system, Al-Baarri, A.N., Legowo, A.M., Widayat | IOP Conference Series: Earth and Environmental Science 102(1),012003 | 2018 |
| 25 | Study of utilization liquid smoke and carrageenan as a natural antibacterial in manufacturing beef meatballs, Widayat, W., Arifiani, S.N., Yaqin, N., Al Baarri, A.N. | IOP Conference Series: Earth and Environmental Science 102(1),012060 | 2018 |
| 26 | Antioxidant activity and total phenolic content in Red Ginger (Zingiber officinale) based drinks, Widayat, Cahyono, B., Satriadi, H., Munfarida, S. | IOP Conference Series: Earth and Environmental Science 102(1),012025 | 2018 |
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| 29 | Preparation and Characterization of NiMo/Al2O3Catalyst for Hydrocracking Processing, Widiyadi, A., Guspiani, G.A., Riady, J., Chaiunnisa, S.D., Widayat | E3S Web of Conferences 31,04011 | 2018 |
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| No | Judul | Penerbit/Alamat Website Penerbit | Tahun |
|---|---|---|---|
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| No | Judul | Penerbit/Alamat Website Penerbit | Tahun |
|---|---|---|---|
| 50 | Synthesis H-Zeolite Catalyst by impregnation $KI/KIO_3$ dan Performance Test Catalyst for Biodiesel production, Widayat, Adit Rizky Wicaksono, Lukman Hakim Firdaus dn Ndaru Okvitarini | *IOP Conf. Series.: Material Science and Engineering* Vol 107(2016) No. 012044 | 2016 |
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| 55 | Optimization process of tribenzoine production as a glycerol derived product, **Widayat,** Abdurrakhman, Y. Rifianto, Abdullah, Hadiyanto, Asep M. Samsudin, and A. N. Annisa | AIP Conference Proceedings **1699**, 060023 (2015); doi: 10.1063/1.4938377 | 2015 |
| 56 | Kinetic Study on Esterification of Oleic Acid with Ultrasound Assisted, Dianita Dini Suprarukmi, Bagus Agang Sudrajat and **Widayat** | Procedia Enviromental Scinces 23 (2015) 78-85(International Conference on Tropical and Coastal Region Eco Development 2014 (ICTCRED 2014) ISSN: 1878-0296 Tahun Terbit: 2015 Penerbit: Elsevier Ltd | 2015 |
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| 59 | Optimization of Eugenol Extaction from Clove Oil using Response Surface Methodology | Modern Applied Science www.ccsenet.org/journal/index.php/mas | 2015 |
| 61 | Improvement of Clove Oil quality by using adsorption – distillation process | RJASET www.maxwellsci.com /jp/j2p.php?jid=RJASET | 2014 |
| 62 | Biofikasasi CO2 oleh Mikroalga Chlamiydomonas sp dalam Photobioreaktor Tubular | Reaktor ejournal.undip.ac.id/index.php/reaktor/index | 2014 |
| 63 | Diethyl Ether Production Process with Various Catalyst Type | IJSE ejournal.undip.ac.id/index.php/ijse/index | 2013 |

| No | Judul | Penerbit/Alamat Website Penerbit | Tahun |
|---|---|---|---|
| 64 | Biodiesel Production From Bulk Frying Oil With Ultrasound Assisted | RJASET www.maxwellsci.com/jp/j2p.php?jid=RJASET | 2013 |
| 65 | Study On Production Process Of Biodiesel From Rubber Seed (*Hevea Brasiliensis*) By In Situ (Trans)esterification Method With Acid Catalyzed | Energy Procedia | 2013 |
| 66 | Kinetika Reaksi Pada Proses Produksi Dietil Eter Dari Etanol Dengan Katalis H-Zeolit | Reaktor ejournal.undip.ac.id/index.php/reaktor/index | Juni 2012 |
| 67 | Study on Production Process of Biodiesel From Rubber Seed (Hevea Brasiliensis) by In Situ (Trans)esterification Method | IREME www.praiseworthyprize.org/jsm/?journal=IREME | November 2012 |
| 68 | **2.1.2 Biodiesel Production from Rubber Seed Oil via Esterification Process** | IJRED ejournal.undip.ac.id/index.php/ijred | 2012 |
| 69 | **2.1.3 Ultrasound Assisted Esterification of Rubber Seed Oil for Biodiesel Production** | IJRED ejournal.undip.ac.id/index.php/ijred | 2012 |
| 70 | Pengaruh Viskositas Dan Laju Alir Terhadap Hidrodinamika Dan Perpindahan Massa Dalam Proses Produksi Asam Sitrat Dengan BioreaktorAir-Lift Dan Kapang *Aspergilus Niger* | Reaktor ejournal.undip.ac.id/index.php/reaktor/index | Juni 2011 |
| 71 | *2.1.3.1 The Effect of Temperature and Ethanol Concentration on Diethyl Ether Production By Using Adsorption –Dehydration Process* | IRECE www.praiseworthyprize.org/jsm/?journal=ireche | Januari 2011 |

**Paten / HKI :**

| | | | |
|---|---|---|---|
| 1 | Proses Produksi Biodiesel Dari Mikroalga Secara Insitu (Inventor Utama) | IDS 00001962 26 September 2018 | 2018 |
| 2 | *2.1.3.2 Alat Pengering Hybrid bagi Tanaman Hebral (Inventor Kedua)* | Pendaftaran Paten Indonesia | 2014 |
| 3 | Proses Fitoremediasi Dua Tahap Untuk Pengolahan Limbah Cair Kelapa Sawit Dan Produksi Biomasa Alga (Inventor Kedua) | Pendaftaran Paten Indonesia | 2015 |
| 4 | Proses Produksi Eugenol Dari Minyak Cengkeh Dengan Proses Adsorpsi Dan Distilasi Fraksinasi (Inventor Utama) | Pendaftaran Paten Indonesia | 2015 |
| 5 | Metode dan reaktor untuk Produksi biodiesel dai Minyak Goreng Bekas Berbantukan Gelombang Ultrasonik | Pendaftaran, P00201806112 13 AGustus 2018 | 2018 |

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- Sinta ID 5993786
  https://sinta.ristekbrin.go.id/authors/detail?id=5993786&view=overview
- Google Scholar : Mochammad Qomaruddin
  https://scholar.google.com/citations?user=T57LDSoAAAAJ&hl=en
- Research Gate : Mochammad Qomaruddin
  https://www.researchgate.net/profile/Mochammad_Qomaruddin

**Riwayat Pendidikan**

| Tahun Lulus | Jenjang | Sekolah/Perguruan Tinggi | Jurusan/Bidang Studi |
|---|---|---|---|
| 1995 | SD | Sekolah Tlogosari 02 Semarang | - |
| 1998 | SMP | SMPN 15 Semarang | - |
| 2001 | SMA | SMAN 2 Semarang | IPA |
| 2004 | D3 | Politeknik Negeri Semarang | Teknik Sipil |
| 2007 | S1 | Universitas Semarang | Teknik Sipil |
| 2010 | S2 | Universitas Islam Sultan Agung | Teknik Sipil |

**Pengalaman Organisasi dan Struktural**

| No | Organisasi | Jabatan | Tahun |
|---|---|---|---|
| 1 | Ketua Program Studi Teknik Sipil UNISNU | Ketua | 2013 – 2017 |

**Riwayat Kepangkatan dan Jabatan**

**a. Riwayat Kepangkatan**

| No | Pangkat/Golongan | TMT |
|---|---|---|
| 1 | Penata Muda Tk. I / III B | 2 Januari 2018 |
| 2 | Penata / III C | 3 Maret 2020 |

**b. Riwayat Jabatan Akademik / Fungsional**

| No | Pangkat/Golongan | Tahun |
|---|---|---|
| 1 | Asisten Ahli | 2017 |
| 2 | Lektor | 2020 |

**Pengalaman Penelitian**

| No. | Judul Penelitian | Sumber Dana (Rp) | Kedudukan dalam Penelitian | Tahun |
|---|---|---|---|---|
| 1. | Estimasi Biaya Eksternal Pada Pelaksanaan Perkerasan Jalan Campuran Aspal Panas | Mandiri | Anggota | 2015 |
| 2. | Analisa Kuat Tekan Mortar Beton *Fly Ash* Dari Industri Pltu Tanjung Jati B Dengan Menggunakan Pasir Sungai Tempur Di Kabupaten Jepara | Internal UNISNU Rp. 2.500.000,- | Ketua | 2015 |
| 3. | Analisa Kuat Tekan Mortar Beton Fly Ash PLTU Tanjung Jati B Jepara Menggunakan Addittif *Superplastizer* Sikamen Tipe LN Untuk Mencapai Beton Mutu Tinggi | Internal UNISNU Rp. 2.500.000,- | Ketua | 2016 |
| 4. | Analisis Alinyemen Horizontal Pada Tikungan Depan Gardu Pln Ngabul Di Kabupaten Jepara | Internal UNISNU Rp. 2.500.000,- | Ketua | 2016 |
| 5. | Efektifitas Mortar Beton *Fly Ash* Pada Kolam Dengan Pengaruhnya Terhadap Ikan Nila (*Oreochromis Niloticus)* (Tahun-1) | PKPT Ristekdikti Rp.100.000.000,- | Ketua | 2017 |
| 6. | Efektifitas Mortar Beton *Fly Ash* Pada Kolam Dengan Pengaruhnya Terhadap Ikan Nila (*Oreochromis Niloticus)* (Tahun-2) | PKPT Ristekdikti Rp.221.400.000,- | Ketua | 2018 |
| 7. | Pemanfaatan Limbah Plastik Menjadi Agregat Dalam Pembuatan Mortar Geopolimer | PAL UNISNU Rp. 8.000.000,- | Ketua | 2019 |
| 8. | Kajian Material Penambah Kecepatan Perkerasan Beton Pada Geopolimer | PDP Ristekdikti Rp. 19.800.000 | Ketua | 2019 |

**Publikasi**

**a) Jurnal Internasional**

1. **Qomaruddin,M.** Sudarno. (2018). *Influence of Bottom-Ash Mixed with Gypsum as Concrete Bricks for Wall Construction Material*. *8*(4), 0–5. Journal of Applied Environmental and Biological Sciences**.** Alamat URL : https://www.textroad.com/pdf/JAEBS/J.%20Appl.%20Environ.%20Biol.%20Sci.,%208(4)109-114,%202018.pdf
2. Sudarno. **Qomaruddin,M**. (2018). *Influence Of Fiber Plastic Sacks On Cement Treated Recycling Base. International Journal of Engineering Sciences & Research Technology.* Alamat URL : http://www.ijesrt.com/May-2018.html

**b) Prosiding Internasional Terindeks Scopus**

1. **Qomaruddin, M**. Sudarno. (2019). *The study of laminate concrete between geopolymer and conventional*. Journal of Physics: Conference Series 1363. Alamat URL : https://doi.org/10.1088/1742-6596/1363/1/012011
2. **Qomaruddin, M**, AyLie, H. Hidayat, A. Sudarno and Kustirini, A. (2019). *Compressive Strength Analysis On Geopolymer Paving By Using Waste Substitution Of Carbide Waste And Fly Ash.* Journal of Physics: Conference Series, Volume 1424 Alamat URL : https://iopscience.iop.org/article/10.1088/1742-6596/1424/1/012052/pdf

**c) Jurnal Nasional Terakreditasi**

1. **Qomaruddin, M**. Ariyanto, Istianah, F. Z. (2020). Pemanfaatan Limbah Plastik Menjadi Agregat Pada Mortar Geopolimer. *Dinamika Rekayasa*, *Universitas Jenderal Soedirman*, *16*(2). Alamat URL : http://dinarek.unsoed.ac.id/jurnal/index.php/dinarek/article/view/284
2. **Qomaruddin, M.** Umam, K. Istianah. Saputro, Y. A. Purwanto. (2019). Pengaruh Bahan Kalsium Oksida Pada Waktu Pengikatan Pasta Beton Geopolimer dan Konvensional. *Jurnal Eksakta Universitas Islam Indonesia*, *19*(2), 182–191. Alamat URL : https://doi.org/10.20885/eksakta.vol19.iss2.art8
3. **Qomaruddin, M**. Ariyanto, Umam, K. Saputro, Y. A. (2018). Studi Komparasi Karakteristik Pasir Sungai Di Kabupaten Jepara. *Jurnal Ilmiah Teknosains Universitas PGRI Semarang*, *4*(1). **Alamat URL** : http://journal.upgris.ac.id/index.php/JITEK/article/view/2283

**d) Prosiding Nasional**

1. **Qomaruddin, M**. Munawaroh, T. H., & Sudarno, S. (2015). Estimasi Biaya Eksternal Pada Pelaksanaan Perkerasan Jalan Campuran Aspal Panas. Prosiding Seminar Nasional Pascasarjana. Universitas Diponegoro.
2. Zainuddin, M. **Qomaruddin, M.** (2017). Performa Pertumbuhan Ikan Nila Merah (Oceochromis Niloticus) Pada Bak Budidaya Berbahan Limbah B3 Fly Ash Dari PLTU Tanjung Jati B Jepara. Seminar Nasional Kelautan XII. Universitas Hang Tuah Surabaya.
3. **Qomaruddin, M**. (2017). Pemanfaatan Air Bersih Masyarakat Pada Program Pamsimas Di Desa Raguklampitan Kabupaten Jepara. Seminar Nasional Hasil-hasil Penelitian dan Pengabdian, Universitas Muhammadiyah Semarang.
4. **Qomaruddin, M.,** Nabella, A. R., Sitohang, I., & Aylie, H. (2017). Studi Pengaruh Air Laut Pada Mortar Beton Normal Dan Mortar Beton Dengan Fyl Ash. Konferensi Nasional Teknik Sipil 11 (KONTEKS 11) Universitas Tarumanegara Jakarta.
5. **Qomaruddin, M**. Saputro, Y. A., & Sudarno, S. (2018). Kajian Penggunaan Bottom Ash sebagai Mortar Beton. *Prosiding SNST Ke-9 Universitas Wahid Hasyim Semarang*, 34–39.
6. **Qomaruddin, M**. Munawaroh, T. H., & Sudarno, S. (2018). Studi Komparasi Kuat Tekan Beton Geopolimer dengan Beton Konvensional. *Prosiding SNST Ke-9 Tahun 2018 Fakultas Teknik Universitas Wahid Hasyim*, 40–45.
7. Rochmanto, D., Umam, K., & **Qomaruddin, M.** (2019). Pengaruh Limbah Gypsum PLTU Terhadap Kuat Tekan Dan Daya Serap Air Pada Beton Geopolimer. *Prosiding SNST Ke-10 Tahun 2019 Fakultas Teknik Universitas Wahid Hasyim*, *2017*, 95–100.

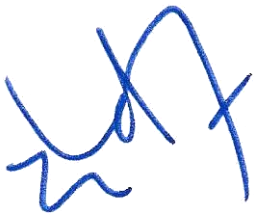
**e) Karya Buku**

1. Pemanfaatan Limbah Batubara untuk Bahan Konstruksi ISBN. 978-602-60701-7-3 (2018)
2. Panduan Praktikum Teknologi Bahan Konstruksi ISBN. 978-602-53068-5-3 (2018)
3. Teknologi Bahan Konstruksi ISBN. 978-623-91604-1-8 (2019)

**f) Pendaftaran PATEN**

1. Pemanfaatan Mortar Berbasis Bottom Ash Untuk Konstruksi Bangunan. S00201801055 (2018)
2. Metode Pembuatan Mortar Reclaimed Asphalt Pavement Dengan Perlakuan Awal Proses Pirolisis. S00202005901 (2020)

Semarang, February 2021



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| 2008 | SD | Antonius 02 Semarang | - |
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**Pengalaman Penelitian**

| No. | Judul Penelitian | Kedudukan dalam Penelitian | Tahun |
|---|---|---|---|
| 1. | Studi Eksperimental Pengaruh Penambahan Benang Nilon terhadap Kuat Lentur dan Kuat Tekan Bata Ringan | Anggota | 2019 |

**Pengalaman Kepanitiaan**

| No. | Kepanitiaan | Kedudukan | Tahun |
|---|---|---|---|
| 1. | fib-Indonesia Mini Symposium on Concrete Structure "Past Achievements, Current Issues, and Future Development of Concrete | Panitia | 2018 |
| 2 | 4th International Conference on Rehabilitation and Maintenance in Civil Engineering | Editorial team | 2018 |
| 3 | The 7th International Conference of Euro Asia Civil Engineering Forum (EACEF) "Structures, Strengthening and Fastenings – Designing for Performance" | Editorial team | 2019 |

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**Professional**

| Year | Function |
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| 2006 - 2014 | Associate Professor (UHD), Faculty of Civil Engineering and Geosciences, Department of Materials & Environment, Delft University of Technology, Delft, The Netherlands. **See below for summary of work.** |
| 1999 - 2006 | Senior research scientist, Microsensor Research Group, Max-Planck-Institute for Marine Microbiology, Bremen, Germany. Successfully acquired research funds during this period, and subsequent supervision of three PhD research projects:<br>1. 2001 MPG (Max-Planck-Gesellschaft) granted PhD project: 'Flow of carbon in complex marine ecosystems: Structure and functioning of microbial sediment communities with respect to carbon cycling'. PhD student: Rebecca Ludwig; successful PhD graduation: May 14, 2004<br>2. 2003 DFG (Deutsche-Forschungsgemeinschaft) granted PhD project: 'Role of *Chloroflexus*-like bacteria in cycling of organic compounds in benthic microbial ecosystems'. PhD student: Ami Bachar; successful PhD graduation: February, 2008<br>3. 2003 MPG (Max-Planck-Gesellschaft) granted PhD project: '*In situ* physiology and diversity of *Beggiatoa*: role in nitrogen and sulfur cycling in aquatic sediments'. PhD student: Susanne Hinck; successful PhD graduation: July 09, 2009 |
| 1994 - 1999 | PhD, Universit of Groningen, Faculty of Mathematics & Natural Sciences, Department of Microbial Ecology, The Netherlands<br><br>Title PhD thesis: 'Microbial production and consumption of dimethyl sulfide (DMS) in intertidal sediment ecosystems' |
| 1992 - 1994 | Research Scientist, Department of Paleontology, University of Groningen, and Department of Marine Geology, Free University Amsterdam, The Netherlands. Study on biodiversity and distribution of symbiont-bearing benthic foraminifera in relation to changing environmental parameters around coral reef-fringed islands in a shallow tropical coastal shelf sea (Spermonde Archipelago, Indonesia) |
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| Year | Function |
|---|---|
| | biomass dynamics of selected faunal key species in the Dutch North Sea and Wadden Sea ecosystems. This model instrument 'REFEREE' (Risk Evaluation Framework for Estimating the Risk of Ecological Effects) has been used since for ecological risk assessments in these ecosystems |
| 1990 | National Service |

**Educational background:**

1983 - 1989 Doctorate (M.Sc.) Marine Biology, Faculty of Mathematics and Natural Sciences, University of Groningen, The Netherlands

**Fields of Interest:**

Development of novel bio-based materials for Civil Engineering practices. Interactions between (construction) materials and the living environment. Sustainability quantification (Life Cycle Assessment techniques). Environmental engineering, Concrete technology, Microbiology, Biotechnology.

2006 - 2013 Delft University of Technology: summary of work

**Research:**

Chai leader of the Sustainability research group within the section Materials and Environment, department of Structural Engineering, Faculty of Civil Engineering and Geosciences.

Objective of the Sustainability research group is to achieve sustainable integration of civil engineering constructions and activities within the natural environment. Tools and strategies for its realization are 1) Development of novel sustainable bio-based materials for civil engineering applications and subsequent valorization and

2) Integration and application of Life Cycle Assessment (LCA) technologies in teaching and research for quantification of sustainability in relation to material durability and cost aspects.

**Sustianbility group members (2013-14):**

Full: Henk Jonkers (UD – group leader) ; Virginie Wiktor (Postdoc) ; Lupita Sierra Beltran (Postdoc) ; Renee Mors (PhD) ; Natalie Carr (PhD) ; Damian Palin (PhD) ;Jacoppo Francesconi (MSc student) ; Tim Lohse (BSc student) ; Jan Jaap Hofman (BSc student) ;Shahir Masri Hussien (BSc student) ; Shared (with Erik Schlangen, Chair Experimental MicroMichanics, M&E section): Eirini Tziviloglu (PhD) ; Balqis Binti Md Yunus (PhD) ; Collaboration Shenzen University: Jinlong (PhD) co-supervision with Prof Xu Deng

**Obtained research grants currently running projects:**

| No | Research project | | Period | Euro |
|---|---|---|---|---|
| 1 | IOP Bio2Concrete | PhD Renee Mors | 01.08.2011 - 01.08.2015 | 337 k€ |
| 2 | STW BioRetrofit | Postdoc Virginie Wiktor<br>Postdoc Lupita Beltran | 01.03.2011 - 01.03.2013 | 418 k€ |
| 3 | IOP Bio2Retrofit | Postdoc Virginie Wiktor<br>Postdoc Lupita Beltran | 01.03.2013 - 01.03.2015 | 337 k€ |
| 4 | STW BioCement | PhD Natalie Carr | 01.01.2012 - 01.01.2016 | 269 k€ |
| 5 | EU Marie Curie ITN SHeMat | PhD Damian Palin | 01.07.2012 - 01.07.2016 | 258 k€ |
| 6 | EU FP7 HEALCON | PhD Eirini Tziviloglu | 01.10.2012 - 01.10.2016 | 258 k€ |

**Invited speaker key note lectures 2013:**

1. 40th Annual Meeting & Exposition of the Controlled Release Society July 21–24, 2013 Hawaii Convention Center Honolulu, Hawaii, U.S.A.
2. Totally Concrete Expo 2013 Conference and exhibition 4-5 June 2013 Sandton Convention Centre, Johannesburg, South Africa

**Organization conference session/mini symposium 2013:**

Organizer and chair of Mini-symposium: 'Bio-cementation and bio-clogging in porous media: fundamentals and engineering applications' within 5th International Conference on Porous Media & Annual Meeting, 21 - 24 May, 2013 Prague, Czech Republic.

**Teaching:**

| Responsible for courses 2013-2014: | | ECTS: | Students: |
|---|---|---|---|
| 1. | CT2121 Experiment (part of 'Bouwplaats') | 2 | >350 |
| 2. | Construction Materials and Sustainability | 5 | >350 |
| | (Shared with Oguzhan Copuroglu: formerly CT1121/1122) | | |
| 3. | CIE4100 Ecological Engineering | 4 | >100 |
| Contribution to: | | | |
| 4. | CT3721 Infrastructurele voorzieningen (Frank Sanders) | | |

BKO: Certificates obtained for

Mo21 (Development of Teaching and Active learning - Course development)

Mo23 (Assessment – Test construction and analysis)

Currently running (to be finalized December 2013):

Mo22 (Delivery of Teaching and Active learning)

Mo33 (Effective use of ICT in education)

Exposure of research activities: see below, '**Public appearances / popular press'**

**Management:**

**Member of committees:**

1. STW BioGeoCivil Engineering Programma Commissie (Bio-based Geo- and Civil Engineering for a Sustainable Society)
2. DCMat Policy Committee + chairman DCMat Newsletter
3. RILEM Technical Committee (secretary): Microorganisms-Cementitious Materials Interactions (MCI)
4. TUD – CiTG PhD Graduate school mentor

**Organizing committee member upcoming conferences:**

7th Interpore Conference (International conference on flow in porous media) 2015, Noordwijk

2nd EURO (Ecologisch ontwerpen van de Urbane en Rurale Omgeving) 2014 symposium, Delft

**Scientific Publications / Citation record** (consulted Web of Knowledge Aug 2013)**:**

| | |
|---|---|
| **Citation score (times cited)** | **3113** |
| **Scopus H-index (2019)** | **29** |

**Publications < 2013:**

| | |
|---|---|
| **Book chapters** | **3** |
| **Journals** | **88** |
| **Conference proceedings** | **: 28** |

**Publications:**

1. S. S. Salek, R. Kleerebezem, H.M. Jonkers, G.J. Witkamp and M.C.M. van Loosdrecht (2013) Mineral CO2 sequestration by environmental biotechnological processes. Trends in Biotechnology, Vol. 31 (3):139-146
2. S. S. Salek, R. Kleerebezem, H.M. Jonkers, J.H.L. Voncken and M.C.M. van Loosdrecht (2013) Determining the impacts of fermentative bacteria on wollastonite dissolution kinetics. Appl Microbiol Biotechnol 97:2743-2752
3. R. De Wit, M-C. Guerrero, A. Legaz, H.M. Jonkers, L. Blocier, C. Gumiaux and P. Gautret. (2013) Conservation of a permanent hypersaline lake: management options evaluated from decadal variability of Coleofasciculus chthonoplastes microbial mats. Aquatic conservation: Marine and freshwater ecosystems, volume 24 (4):532-545. DOI: 10.1002/aqc.2319
4. Henk M. Jonkers, Virgini Wiktor, Klaas van Breugel (2013) Experience with and potential of bacteria for self-healing concrete. FIB2013 conference, 22-24 April 2013, Tel Aviv, Israel.
5. 1H.M. Jonkers, D. Palin, P. Flink and A. Thijssen (2013) Microbially mediated carbonation of marine alkaline minerals: Potential for concrete crack healing. Proceedings of the Fourth International Conference on Self-Healing Materials ICSHM2013, Belgium – Ghent 16-20 June 2013. ISBN 9789082073713. pp 610-614.
6. V. Wiktor, S. Sangadji, H.M. Jonkers and E. Schlangen (2013) Potential of bacteria-based repair solution as healing agent for porous network concrete. Proceedings of the Fourth International Conference on Self-Healing Materials ICSHM2013, Belgium – Ghent 16-20 June 2013. ISBN 9789082073713. pp 592-596.
7. R.M. Mors and H.M. Jonkers (2013) Practical approach for production of bacteria-based agent-contained light weight aggregates to make concrete self-healing. Proceedings of the Fourth International Conference on Self-Healing Materials ICSHM2013, Belgium – Ghent 16-20 June 2013. ISBN 9789082073713. pp 240-243.
8. D. Palin, V. Wiktor and H.M. Jonkers (2013) Bacteria-based self-healing concrete for application in the marine environment. Proceedings of the Fourth International Conference on Self-Healing Materials ICSHM2013, Belgium – Ghent 16-20 June 2013. ISBN 9789082073713. pp 244-247.
9. S. Sangadji, V. Wiktor, H. Jonkers, and E. Schlangen (2013) Injecting a liquid bacteria-based repair system to make porous network concrete healed. Proceedings of the Fourth International Conference on Self-Healing Materials ICSHM2013, Belgium – Ghent 16-20 June 2013. ISBN 9789082073713. pp 118-122.
10. H.M. Jonkers (2013) Crack-mediated Release of Encapsulated Bacteria-based Agent Makes Concrete Self-healing. 40th Annual Meeting & Exposition of the Controlled Release Society, July 21-24, 2013, Hawaii Convention Center Honolulu, Hawaii, U.S.A.

**Public appearances / popular press:**

Television:

Pro7 – Germany – 'Galileo' (2013): Self-healing concrete and asphalt

ARD – 'Mediathek-Wissen vor 8' (2011): Bauen mit Reis

ZDF – Germany – ‘Mittags Magazin’ (2010): Bacteria-based self-healing concrete

Internet:

Volkskrant wetenschapsbijlage video (2009): Self-healing BioConcrete

Delft Design Award (2009) YouTube: BioConcrete (>100.000 views)

Newspapers:

NL / NRC Handelsblad (2/3/2008): Bacteriebeton leeft langer

NL / Trouw (3/4/2008): Het nut van bacteriën

NL / Reformatorisch Dagblad (12/8/2008): Bacteriën tegen betonrot

NL / Volkskrant (17/2/2009): Schoon beton – krijgt frivole trekjes

NL / Het Parool (8/9/2012): Biobeton repareert scheuren zelf

NL / Nederland Dagblad (8/9/2012): Zelfhelend materiaal

Popular / technical magazines:

NL / BioNieuws (2/2/2008): Zelfhelend beton: een cadeautje van de natuur

NL / De Ingenieur (Maart 2008): Bacteriën voorkomen betonrot

NL / ‘EOS’ (April 2008): Bacteriën als bouwvakkers

NL / Kijk (Januari 2009): Genezende materialen

NL / CoBouw (November 2011): Eerste zelfherstellend beton toegepast

NL / De Architect (Maart 2012): Zelfherstellend beton

NL / Technisch Weekblad (Juli 2012): Succes voor zelfhelend beton

UK / Architectural Design (2008): Artificial Evolution

UK / New Civil Engineer (9/9/2010): Dutch develop self-healing BioConcrete

UK / Ingenia (March 2011): Self-healing concrete

UK / The Engineer (April 2011): Wise crack: Self-healing concrete

UK / Bridge Design & Engineering (Issue 68 - 2012): Structural healing

UK / New Scientist (September 2010): For self-healing concrete, just add bacteria and food

DE / AutoBild (July 2013): Diese Strasse flickt sich selbst

USA / The Economist (April 2009): Filling in the cracks – How to preserve concrete with bacteria

JP / Nikkei Construction (22/10/2010): Self-healing BioConcrete [translated]

PTT-Post uitgave postzegel in de reeks ‘100 jaar Microbiologie’ (januari 2011):

Zelfhelend beton bacterie

**Other:**

Winner of Delft Design Award 2009: 'Bio-Concrete' 25.000 €

High School student project 'A concrete solution for a concrete problem': winner of the 2011-2012 Imagine contest (www.foundation-imagine.org)

**References:**

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2. Prof. Dr. Ir. Erik Schlangen, Materials & Environment research group, Delft University of Technology, Delft, The Netherlands. Tel: +31 (0)15 27 86535. E-mail:h.e.j.g.schlangen@tudelft.nl
3. Prof. Dr. Sybrand van der Zwaag, Aerospace Engineering - novel aerospace materials, and scientific director Delft Centre for Materials, Delft University of Technology, Delft, The Netherlands. Tel: +31 (0)15 27 82248. E-mail: s.vanderzwaag@tudelft.nl
4. Prof. Dr. Mark van Loosdrecht, Environmental Biotechnology research group, Kluyver Laboratory for Biotechnology, Delft University of Technology, Delft, The Netherlands. Tel: +31 (0)15 27 81618. E-mail: m.c.m.vanloosdrecht@tnw.tudelft.nl
5. Prof. Dr. Gerard Muyzer, Microbial Systems Ecology - Aquatic Microbial Ecology Group, University of Amsterdam. Science Park 904, 1098 XH Amsterdam. Tel: +31 20 5257678. E-mail: g.muyzer@uva.nl
6. Prof. R J Lark, Cardiff School of Engineering, BRE Institute of Sustainable Engineering, UK, T: +44 29 2087 6176, E-mail: Lark@cardiff.ac.uk
7. Prof. Dr. Bo B. Jørgensen, Department of Bioscience - Center for Geomicrobiology, Aarhus University, Denmark. Former director Max-Planck-Institute for Marine Microbiology, Bremen, Germany. Tel: + 45 8942 3314. E-mail: bo.barker@biology.au.dk
8. Dr. Dirk de Beer, group leader Microsensor Research Group, Max-Planck-Institute for Marine Microbiology, Bremen, Germany. Tel: +49 421 2028 802. E-mail: dbeer@mpi-bremen.de
9. Dr. Rutger de Wit, directeur de recherche CNRS, Laboratory Ecologie des Systèmes Marins Côtiers, University of Montpellier, France. Tel: + 33 4 67 14 34 29. E-mail:rutger.de-wit@univ-montp2.fr

**APPENDIX D. Statement letter from the chief researcher**

## SURAT PERNYATAAN KETUA PENELITI

Yang bertanda tangan dibawah ini :

Nama : Prof. Ir. M. Agung Wibowo, MM., MSc., PhD.

SIP / AIDS 196702081994031005

Pangkat / Golongan : IV C

Jabatan Fungsional : Guru Besar

Dengan ini menyatakan bahwa proposal penelitian saya dengan judul : "The Mechanical Properties Of Mortar With Pyrolysis Processed Asphalt Reclaimed Paving". Yang diusulkan dalam skema penelitian unggulan untuk tahun anggaran 2021 bersifat **original dan belum pernah dibiayai oleh lembaga / sumber dana lain.**

Bilamana dikemudian hari ditemukan ketidaksesuaian dengan pemyataan ini, maka saya bersedia dituntut dan diproses sesuai dengan ketentuan yang berlaku dan mengembalikan seluruh biaya penelitian yang sudah diterima ke kas negara.

Demikian pemyataan ini dibuat dengan sesungguhnya dan dengan sebenar-benamya.

Semarang, 24 Februari 2021

Yang menyatakan,


Prof. Ir. M. Agung Wibowo, MM., MSc., PhD
NIP. 196702081994031005