Achmad Fadjar Maulana Firdaus

Jl. Ngagel Baru II/146, Surabaya, East Java
achmadfadjarm@gmail.com | +6287720779093 | linked.in/achmadfadjarm

Summary

A senior year materials and metallurgical engineering student at ITS, Surabaya. I am Involved with several research projects related to corrosion inhibitor, finite element analysis (FEA), and solid rocket propellant during my time in college. In addition to that, I am also active in ITS' Chem-E-Car club, clinching the 1st place in VDI ChemCar Competition in 2024 and 2nd place in the AIChE annual Chem-E-Car competition 2023.

Education

Institut Teknologi Sepuluh Nopember **2021-2025**
Materials & Metallurgical Engineering Current GPA: 3.83 of 4.00

Internship Experience

PT. Aneka Patra Integritas

Reliability Engineer Internship **Jan 2025-Mar 2025**

- Help developing Asset Integrity Management System based on ASME B31G Fitness-for-Service (FFS) guidelines for piping & pressure vessel system in Husky-CNOOC Madura Ltd.
- Remaining Life Assessment (RLA) based on API-581 for Pressure Safety Valve in Medco EP's Belanak FPSO
- RLA Assessment for PT. Pertamina Hulu Sanga-Sanga Badak Central Plant Installation
- Corrosion Assessment for Risk-Based Inspection in Husky-CNOOC Madura Ltd. offshore assets

PT. Dirgantara Indonesia

Materials & Process Engineer Intern **Dec 2023-Feb 2024**

- Analyzing defect types & causes in aircraft component manufacturing through NDT testing
- Analyzing materials suitability on various manufacturing process related to aircraft manufacturing
- Final report titled "Fluorescent Dye Penetrant Application on Union Tubing Component of CN-235 Aircraft"

Project Experience

Institut Teknologi Sepuluh Nopember – LPDP
Research Assistant on RISPRO LPDP Project – FFAR Propellant Research **Jul 2024-Now**

- Assisting the synthesis of energetic polymer related to rocket propellant research
- Adapting novel material as energetic polymer modifier to increase propellant performance
- Materials characterization & analysis using gravimetry, titrimetry, SEM, FTIR, and XRD technique
- Assisting the compilation of job safety assessment in the energetic materials laboratory

PKM Riset Eksakta
Research Member **Mar 2024-Jul 2024**

- Succesfully synthetizing new imidazoline inhibitor from waste cooking oil with excellent inhibition efficiency (>98%) in H_2S and CO_2 brine solution.
- Perform corrosion analysis using weight loss, linear polarization (LP), adsorption isotherm, and SEM technique.
- Doing inhibitor compound characterization and analysis using GC-MS and FTIR.

PT. CADFEM Indonesia

Studi Independen Bersertifikat – Finite Element Analysis **Feb 2024-Jun 2024**

- Doing FEA Analysis (Static Analysis, Modal Analysis, Explicit Dynamics Analysis, Thermal-Electrical Analysis, Time Domain Analysis) for problems given by mentor
- Capstone Project: Conceptualized a flexible TEG design and simulated the electrical and mechanical aspect of the design in ANSYS.
- Best 5 from 200 Mentee of the FEA Learning Track

Defense Technology Workshop - ITS

Research Assistant **Sep 2022-Jun 2023**

- Assisting in selecting optimal local raw feedstock for Nitrocellulose production (ex: Cotton linter, Water hyacinth, Wood pulp, Oil palm husk)
- Optimizing process parameter for nitrocellulose production using RSM methodology
- Verifying produced nitrocellulose quality by nitrogen content, degree of polymerization, viscosity, SEM, XRD,and FTIR
- Successfully produced nitrocellulose with 13% nitrogen content

Organization Experience

Spektronics ITS Chem-E-Car Team

Team Leader **Jan 2024-Nov 2024**

- Leading a team of 5 in developing new generation of Chem-E-Car systems
- Conceptualizing new modular design component to be used on Chem-E-Car.
- Developing a novel Al-Air battery cathode that can be reused more than 10 times
- Managing team members' workload and coordinating the development direction of Chem-E-Car with respective stakeholders
- Reducing team members' workload for up to 50% by integrating agile development on Chem-E-Car.
- Managed to bring the accuracy of Chem-E-Car to more than 99.7% of the target.

Technical Member **Jan 2022-Dec 2023**

Responsible for designing and maintaining an efficient and accurate chem-e-car (A prototype car powered by novel chemical reaction), which includes:

- Compiling suitable Job Safety Assessment and Engineering Design Package for Chem-E-Car
- 3D and 2D design of Chem-E-Car using AutoCAD and SolidWorks
- Designing prototype pressurized vessel according to ASME BPVC Section VIII
- Operating and maintaining prototype pressurized vessel systems
- Microcontroller programming using Arduino Microcontroller
- Controlling chemical reactions and phase change condition to improve Chem-E-Car performance.
- Developing Al-Air cathode materials and catalyst for next generation Chem-E-Car power source and reached power density of 35 $\mu W/cm^2$

Certificates, Publication & Achievments

The Inhibition Activity of Fatty Imidazoline Acetate Derived from Waste Cooking Oil on the AISI 1018 Mild Steel Corrosion **2024**

Paper published on Journal of Bio- and Tribo- Corrosion (DOI: 10.1007/s40735-024-00929-y)

1st Place & Best Safety Concept on VDI-Wettbewerb ChemCar Competition **2024**

International Chem-E-Car competition held by KjVI-VDI, Germany

Ansys Associate Certificate: Physics of Structural Mechanics **2024**

Awarded by ANSYS

2nd Place Overall - AIChE Chem-E-Car Competition **2023**

International Chem-E-Car competition held by the American Institute of Chemical Engineer (AIChE)

Others

Skill : AutoCAD, Solidworks, ANSYS, Python, C++, Arduino, Microsoft Office Suite

Language : Indonesia, English (IELTS: 7.5)