

ALFIDAH NUR DENYA

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Chemical Engineering fresh graduate from Institut Teknologi Sepuluh Nopember (ITS) with 4 months of industrial internship experience as a Process Engineering Intern, with hands-on exposure to process engineering, quality control, laboratory activities, and process safety. Experienced in process monitoring, troubleshooting, process optimization, quality evaluation, chemical analysis, mass and energy balance, and process data analysis, identifying opportunities to improve thermal efficiency from 62.75% to 99.85% and reduce monthly fuel costs by 41.66%. Familiar with PFD/P&ID development, process simulation, HAZOP, HIRADC/IBPR, risk assessment, and quality documentation. Interested in Process Engineering, Production, QC/QA, Laboratory, R&D, and HSE/Process Safety roles.

EDUCATION

Institut Teknologi Sepuluh Nopember

Surabaya, Indonesia

Bachelor of Applied Industrial Chemical Engineering, GPA: 3.38/4.00

| July 2022 – August 2026

- 3rd Place, International 3D Plant Design Competition, Global Summer Course Initiative (GSCI) 2026, organized by ITS in collaboration with UMPSA.
- Recipient of PKM-RE 2024 Funding, Ministry of Education, Culture, Research, and Technology, for a research project on hydroxyapatite-based coating for 3D-printed suture anchors using *Pila ampullacea* snail shells.
- Gold Medalist, Diponegoro Science Competition 2023, organized by Diponegoro University Research Incubator Center.

WORK EXPERIENCE

Process Engineering Intern – PT. Magnesium Gosari Internasional, Gresik

| June 2025–November 2025

- Conducted troubleshooting and energy optimization of the Vertical Roller Mill (VRM) dolomite drying system, identifying an optimal inlet gas temperature reduction from 288°C to 220°C.
- Identified potential improvements in thermal efficiency from 62.75% to 99.85% and a potential 41.66% reduction in monthly fuel costs through mass and energy balance analysis.
- Developed PFD, P&ID, mass and energy balances, and HAZOP studies to support process evaluation, troubleshooting, operational analysis, and process safety.
- Performed quality control and laboratory testing of dolomite raw materials and products, including MgO and CaO analysis using EDTA complexometric titration, moisture analysis using a Moisture Analyzer, and particle fineness testing using sieve analysis.
- Verified laboratory test results against established product specifications and quality standards to support product quality consistency.

PROJECT

Thesis - Techno-Economic Study On Scaling Up The Production Of Hydroxyapatite From Rice Field Snail Shells (*Pila Ampullacea*) As A Bone Graft Material

| January 2026 – July 2026

- Designed and evaluated hydroxyapatite scale-up production, including mass and energy balances, process flow design, equipment specification, and techno-economic analysis (CAPEX, OPEX, NPV, IRR, and payback period), resulting in an NPV of IDR 781.2 million, IRR of 65.18%, and payback period of 1.52 years.
- Conducted quality control and evaluation of raw materials and hydroxyapatite products through laboratory testing, chemical analysis, and data analysis, achieving a Ca/P ratio of 1.60 and crystallinity of 95.92%.
- Interpreted XRD, FTIR, SEM, and EDX characterization data to confirm hydroxyapatite formation, characteristic functional groups, rod-like morphology, and relatively low agglomeration.

3D Chemical Plant Design - Innovation in Processing Blackstrap Molasses into Biobutanol to Reduce Reliance on Fossil Fuels

| February 2026 – June 2026

- Designed a biobutanol production plant using blackstrap molasses as feedstock, including PFD and P&ID development, mass and energy balances, equipment specification and sizing, and process simulation using Aspen Plus and Aspen HYSYS to evaluate process conditions and optimize process design.

PKM-RE Research - Innovation in Hydroxyapatite-Based Coating of 3D-Printed PLA Suture Anchors Derived from *Pila ampullacea* Snail Shells to Enhance Bioactivity in Rotator Cuff Injury Surgery

| May 2024–August 2024

- Synthesized hydroxyapatite from *Pila ampullacea* snail shells through calcination, precipitation, and sintering, followed by dip-coating of 3D-printed PLA suture anchors using 4 HAp concentrations (0–1.4 g).
- Conducted 6 material characterization and performance tests, including FTIR, XRD, SEM-EDX, SBF, antibacterial, and compressive strength testing, to evaluate coating characteristics, composition, bioactivity, and mechanical performance.
- Analyzed experimental results for R&D and quality evaluation, achieving 73% crystallinity, Ca/P ratios of 1.66–1.88, and compressive strength of up to 218.93 MPa.

ORGANIZATIONAL EXPERIENCE

Himpunan Mahasiswa Teknik Kimia Industri

Surabaya

Professional Division Staff

| February 2024 – February 2025

- Supported 6 professional and academic development programs, covering career preparation, scientific writing, research, industrial visits, and academic competitions.
- Served as Project Officer for JET (Job Entrance Training), coordinating end-to-end program execution with 10 committee members and 150+ participants.
- Mentored 20 students in PKM and KTI and coordinated department-level PKM activities to support research and scientific writing.

Association for Material Protection and Performance (AMPP) Student Chapter

Surabaya

Competency Development Staff

| January 2024 – January 2025

- Led the AMPP Scientific Writing Training as Project Officer, coordinating a 30+ participant program and managing event execution to foster innovation and creativity in scientific research.
- Supported the execution of an AMPP workshop attended by 50+ participants, covering welding inspection standards, oil and gas industry requirements, and practical welding activities.

Indonesian Corrosion Association (INDOCOR) ITS Student Chapter

Surabaya

Competition Division Coordinator

| January 2024 – August 2024

- Led the execution of the competition division for Indonesian Corrosion Week (ICW), a national-level corrosion engineering competition, overseeing competition guidelines, participant registration, submission, judging and scoring, finalist selection, technical meetings, exhibition, and awarding.

SKILL AND OTHER INFORMATION

- **Quality Control & Laboratory Skills:** Quality Control & Laboratory Testing, Chemical & Physical Testing (pH, moisture, density, viscosity, fineness, chemical composition), Sampling & Sample Preparation, Gravimetric & Volumetric Analysis, Quality Evaluation, Quality Documentation, Analytical Instruments (UV-Vis), Root Cause Analysis.
- **PT Sinergi Ruang Zaman (certificate)** : ISO 9001:2015 (Quality Management), ISO 45001:2018 (Occupational Health and Safety), ISO 14001:2015 (Environmental Management), ISO 10013:2021 (Document Control), ISO 31000 & ISO 31010 (Risk Management), ISO 19011:2018 (Audit Management).
- **Process & Engineering Skills:** Process Data Analysis, Mass & Energy Balance, Process Monitoring & Troubleshooting, Process Optimization, Process Simulation, PFD & P&ID Development, HAZOP, HIRADC/IBPR, Risk Assessment and Process Safety.
- **Software:** Aspen Plus, Aspen HYSYS, Microsoft Excel (Advance), Microsoft Visio, Origin, ImageJ.
- **Soft Skills:** Analytical Thinking, Problem-solving, Critical Thinking, Teamwork, Communication, Leadership, Adaptability, and Continuous Learning.
- **English (2026):** TOEFL ITP 477, Centre for Languages and Cultures (CLC) ITS.