



NADUN THATHSARA

Materials Science & Engineering Undergraduate

 Nadun-Thatthasara  Portfolio

✉ 2001nadun@gmail.com

☎ +94 703484741

📍 Dandagamuwa, Kuliyaipitiya

PERSONAL PROFILE

I am a final-year Materials Science and Engineering undergraduate with a Mathematics Minor and practical R&D experience gained during an internship at Michelin. Skilled in experimental design, data analysis (Python/R), and advanced characterization, I excel at converting laboratory findings into impactful industrial applications. With strong interests in nanomaterials, polymer engineering, and electronics manufacturing, I am passionate about creating innovative, industry-relevant solutions to complex engineering challenges.

WORK EXPERIENCE

Research & Development Intern - Paid Internship

📅 Dec 2023 - Jun 2024

Michelin Lanka Research and Development Center

Contributed to multiple R&D projects on rubber-compound optimization and tire performance.

Analyzing Frequency-Dependent Properties in Cured Tire Compounds

- Implemented DMA frequency-sweep and WLF mode expanding test range and reducing specimen waste. Created SOP for these modes.
- Optimized temperature-sweep parameters considering vehicle speed, sharpening $\tan(\delta)$ based predictions of rolling resistance and traction.

Investigating the Effect of Mastication Time on the Properties of Cured Rubber Compounds

- Used HBU, RPA, and DMA to identify optimum mastication time that reduces stickiness and increase mechanical performance; hands-on experience on mixing and formulation of rubber compounds.

Investigating the Correlation Between DMA Tension Mode $\tan(\delta)$ and Rolling Resistance

- Demonstrated correlation between tension-mode $\tan(\delta)$ and drum rolling resistance across diverse rubber/filler systems, enabling early lab-scale screening.

PROJECTS

Graphene Oxide based Nanofluids for Heat Transfer Applications

📅 2024 - Present

Final Year Project

Supervised by - Dr. (Mrs.) Hansinee Sitinamaluwa

Conducting research on synthesizing sustainable graphene-oxide nanofluids for industrial heat-transfer applications, optimizing thermal conductivity, stability, and viscosity while employing SEM, FTIR, XRD and UV-Visible spectroscopy to characterize GO and develop cost-effective, scalable formulations.

Design and Development of a Transient Hot Wire-Based Thermal Conductivity Measuring Instrument

Designing and prototyping a transient hot wire-based measurement system to test nanofluid thermal conductivity, addressing the lack of available equipment for such evaluations.

Design and Implementation of a Corrosion Protection System for a Subsea Oil Pipeline






📅 2024

20 km carbon-steel pipeline: Zn sacrificial-anode layout, 3LPE/concrete coating, COMSOL validation.


Design of Manual Transmission Gearbox

📅 2023

Five-speed automotive gearbox—gear-ratio optimization, gear geometry, shafts & bearings, Solid Edge simulation.

- Mathematical Modeling of Slip Casting of Tubular Membranes Using Multi-Layer Moulds**  2023
Developed permeability-based model to predict multilayer mould casting time for process control.
- Smart MediBox Design (IoT Pill Dispenser)**  2023
Node-RED/Wokwi prototype with Altium PCB for scheduled medication reminders.
- Designing a Low-Cost Body Trainer Exercise Machine**  2023
Performed material selection and 3D CAD modeling of a budget exercise machine based on analysis of local consumer requirements.
- Design of Aluminum Extrusion Die**  2022 - 2023
Calculated extrusion pressure, extrusion ratio and shrinkage allowances; selected H13 hot-work tool steel and defined a heat-treatment cycle to minimize die defects.
- Designing a Child-Sensitive Milk Bottle**  2022
Selected PCM and multilayer insulation to keep feed at 37 °C; performed thermal-performance calculations.

EDUCATION

- BSc. Engineering Hons. Materials Science and Engineering**  July 2021 - Present
University of Moratuwa
- Upper second class (3.41) up to semester 7
 - Core modules undertaken: Nanomaterials, Electronic and Optical Device Engineering, Polymer Engineering, Latex Science and Technology, Characterization of Materials, Optimization, Experimental Design and Quality Control, Embedded Systems and Applications
- Diploma in English**  2020 - 2021
Wayamba University Sri Lanka
- Merit Pass
- Certificate in Java Application Development using JavaSE**  Oct 2019 - Jan 2020
University of Colombo School of Computing
- GCE (A/L) | Physical Science**  2017 - 2019
Central College Kuliyaipitiya
- Physics: A, Chemistry: A, Combined Mathematics: A
 - District Rank: 30, Z-Score: 2.2639
- Diploma in Information Technology**  2016 - 2017
ESOFT Metro Campus
- Other courses**
- Generative AI with Large Language Models (Coursera)  verify
 - Machine Learning using Python  verify
 - Six Sigma: Certified Lean Six Sigma Yellow Belt (Accredited)  verify

SPORTS

Chess

- University of Moratuwa Chess Club Membership  2021 - Present
- Central College Kuliyaipitiya Chess Club Membership  2011 - 2017

Swimming

University of Moratuwa Swimming Club Membership

📅 2023 - Present

ACHIEVEMENTS

Dean's List

Dean's List is awarded to students who have a semester GPA higher than 3.80.

- Semester 5: 3.89/4.00

Youth Chess Championship – North Western Province

📅 2013

- 9th place

Sri Lanka Inter School Chess Championship

📅 2012

- 2nd place

Queenstar - All Island Lightning Chess Championship

📅 2011

- 3rd place

SKILLS

Technical Skills

- Materials Characterization
- Experimental Design
- Data Analysis: Python, R
- CAD: AutoCAD, Solid Edge
- Modeling & Simulations: FEA, CFD (Ansys Fluent)
- Programming: Python, C#

Software Tools

- AutoCAD, Solid Edge
- Ansys Fluent, Comsol Multi-physics
- ImageJ
- LAMMPS
- Quantum ESPRESSO
- LTspice, SCAPS-1D

Languages

- Sinhala (Native)
- English (Proficient)
- Tamil: Basic, O/L Grade B

REFERENCES

Dr. (Mrs.) H.S. Sitinamaluwa

Senior Lecturer

Department of Materials Science and Engineering,
Faculty of Engineering,
University of Moratuwa.

☎ +94 71 269 0177

✉ hansinees@uom.lk

Mr. A.M.P.B. Samarasekara

Senior Lecturer

Department of Materials Science and Engineering,
Faculty of Engineering,
University of Moratuwa.

☎ +94 77 353 0180

✉ bandu@uom.lk