Swarup Kumar Subudhi

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EDUCATION:

University of Maryland, College Park, MD, USA Graduation (expected): May 2026
Ph.D. Mechanical Engineering, GPA: 3.69/4
Major: Mechanical Engineering,
***Courses*:** Mechanical Fundamentals of Electronic Components, Composite Materials, Interfacial Fluid Mechanics, Modelling Material Behavior, Probabilistic PoF & Accelerated Testing, etc.

National Institute of Technology, Rourkela, India Graduated: May 2016
B.Tech. Mechanical Engineering, GPA: 8.35/10
Major: Mechanical Engineering, Minor: Mathematics
Other Coursework: Digital Logic Design, Materials Technology

WORK EXPERIENCE

University of Maryland, College Park, MD, USA Jan 2021 – present

Graduate Research Assistant II *Jan 2022 – present*
- *Development of Three-Dimensional High-Energy X-Ray Photoelectric Polarimeter Assembly Using Additive Manufacturing Technology [Jan 2024 – present]*
- *Thermal Cycling Reliability of Printed Electronics [June 2024 – Dec 2024]*
- *Reliability Validation and Sustainment of Direct-Write Printed RF Devices [Jan 2022 – May 2023]*

Graduate Teaching Assistant I *Jan 2021 – Dec 2021*
- Fluid Mechanics ENME331
- Mechanics I ENES102

TATA Motors Ltd. CVBU, Jamshedpur, India May 2019 – Dec 2020
Senior Manager, Manufacturing - Transmissions
- Improved Operational Line Efficiency of Gearbox Assembly Line by improving takt time & process quality parameters through process modification
- Implemented low-cost ANDON analysis to capture assembly line losses through use of IoT based micro-controller programming and subsequent action plans for determined causes of losses

TML Drivelines Ltd. (Tata Motors Ltd.) Jamshedpur, India Aug 2016 – May 2019
Asst. Manager, New Product Introduction - Transmissions
- Managed delivery of Defense Vehicle aggregates for 6X6 and 8X8 transmissions
- Launched new gearboxes (as per market requirements) and change-management of processes in assembly lines for smooth & faster delivery of new aggregates

ACADEMIC PUBLICATIONS

- Subudhi, S.K., Zhao, B., Wang, X., Ting, J., Takeuchi, I., Dasgupta, A., and Das, S. (2024) Flexible and twistable free-standing PDMS-magnetic-nanoparticle-based soft magnetic films with robust magnetic properties. *Flexible and Printed Electronics*, 9(1), 015013.
- Subudhi, S.K., Chandel, G.R., Sivasankar, V., and Das, S. (2024) Magnetic Nanoparticle Aggregation and Complete De-Encapsulation of Such Aggregates from a Liquid Drop Interior. *ACS Appl. Mater. Interfaces*
- Subudhi, S.K. and Das, S. (2023) Reliability of Lab-on-a-Chip Technologies for Wearable Electronics: A Perspective. *Frontiers in Sensors*, 4, 1283402.

- Zhao, B., Sivasankar, V., Subudhi, S.K., Sinha, S., Nikfarjam, S., Woehl, T., and Das, S. (2023) Three-Dimensional Deposits from Drying Particle-Laden Drops. *Langmuir* 39(28), 9773-9784.
- Zhao, B., Sivasankar, V.S., Subudhi, S.K., Dasgupta, S., and Das, S. (2023) Printed carbon nanotube-based humidity sensors deployable on surfaces of widely varying curvatures. *ACS Applied Nano Materials* 6(2), 1459-1474.
- Zhao, B., Sivasankar, V.S., Subudhi, S.K., Sinha, S., Dasgupta, A., and Das, S. (2022) Applications, fluid mechanics, and colloidal science of carbon-nanotube-based 3D printable inks. *Nanoscale* 14(40), 14858-14894
- Dhamsania et. al. (2022) Physically soft magnetic films and devices: fabrication, properties, printability, and applications. *Journal of Materials Chemistry C* 10(17), 6563-6589.

PAST ACADEMIC PROJECTS

Jul 2012 – May 2016

- Synthesis and Analysis of a Reconfigurable Manipulator Assembly based on five-bar linkage
- Two-zone mathematical modelling of performance and combustion formation in direct-injection diesel engine operating on carbon black-water-diesel slurry
- Statistical modelling and optimization of MRR (material removal rate) and taper angle in reverse EDM (electro-discharge machining) using response-surface methodology
- Chassis and bodywork design of an electric karting vehicle. Structural deformation and stress analysis at given payload; and working model validation.

TECHNICAL SKILLS

Solid Modelling: SolidWorks, Pro-E,
CAE/CFD: ANSYS Mechanical, Workbench, Fluent; Abaqus CAE
Computational: Matlab & SimuLink, Wolfram Mathematica, Minitab, VMD, LAMMPS
Dev Languages: Python, C, C++, HTML5, CSS3, JavaScript, Arduino IDE
Other: Microsoft Office, Photoshop, Illustrator, Arduino IDE

PROFESSIONAL PROJECTS

Aug 2016 – Dec 2020

- **Case Study on Value Engineering of Hydraulic Tipping Kit of Heavy Commercial Tippers**
  - Optimization & Cost sustainability of hydraulic tipping kits by alternate sourcing of gear pumps
- **Value Engineering Case Study on G1150 (9-speed gearbox) synchronizing parts**
  - Application of new material/technology in sustaining quality & performance of synchronizing cones & improving quality performance of gearboxes and cost sustainability of transmissions
- **Six-Sigma Project: Warranty Cost Reduction of Gearboxes due to Bearing Failures**
  - Application of six-sigma tools/concepts and DoEs to reduce the cost of warranty due to failure of all bearings in a commercial vehicle transmission, applicable for 3-24MIS warranty parts
- **Operational Line Efficiency Improvement of Gearbox Assembly Line**
  - Improvement of Operational Line Efficiency of Gearbox Assembly Line through optimization of takt time & process quality parameters depending on occurrence of defects and ergonomics