

# FARHAN ISHRAK

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## EDUCATIONAL QUALIFICATION

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<b>NC State University</b> Ph.D. in Materials Science and Engineering	January 2023- Present
<b>Missouri State University</b> Master's in Materials Science GPA: 3.97/4.00	January 2021- December 2022
<b>Bangladesh University of Engineering and Technology (BUET)</b> Bachelor of Science in Materials and Metallurgical Engineering Cumulative GPA: 3.65/4.00 (Junior/Senior GPA: 3.82/4.00)	February 2015 - April 2019

## RESEARCH EXPERIENCE

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<b>Missouri State University</b> <i>Graduate Thesis</i> <ul style="list-style-type: none"><li>Synthesis and Characterization of Bi-Magnetic Core-Shell Nanoparticles</li></ul>	January 2021 - December 2022
<b>Bangladesh University of Engineering &amp; Technology (BUET)</b> <i>Undergraduate Thesis</i> <ul style="list-style-type: none"><li>Utilization of Steel Slag to Produce Non-fired Bricks</li></ul>	January 2018 - April 2019

## SKILLS

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<b>Synthesis Techniques:</b>	<ul style="list-style-type: none"><li>Thermal decomposition, evaporation and hydrothermal process for nanoparticle synthesis</li><li>Metal, semiconductor, and insulator based thin film fabrication using Pulsed Laser Deposition (PLD) and Sputtering</li></ul>
<b>Characterization:</b>	XRD, SEM, EDS, RAMAN, UV-Vis spectroscopy, Electrical measurement (I-V) using 4200 parameter analyser, Metallography
<b>Data Analysis:</b>	TOPAS (Rietveld refinement), ImageJ (TEM, SEM), CasaXPS (XPS data analysis)
<b>Mechanical Testing:</b>	UTS, Fatigue, Hardness, Impact, Bend Test
<b>Computational Tools:</b>	<ul style="list-style-type: none"><li>DFT Calculation of electronic and magnetic properties (Quantum Espresso)</li><li>MD simulation to investigate Bulk modulus, CTE, Stress-strain behavior (LAMMPS)</li><li>Visualization tools: OVITO, VESTA</li><li>Data mining: WEKA</li></ul>
<b>General Software:</b>	OriginPro, Labview, Matlab, Solidworks, AutoCAD, Microsoft office

## PRESENTATIONS

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- 'Investigations of Mn-Co-NiO Based Hetero-structured Nanocrystals Synthesized Under Varying Metal Concentrations and Varying Core Particle Size.' Farhan Ishrak, Dr R A Mayanovic. 29<sup>th</sup> Annual Einhellig Graduate Interdisciplinary Forum, Missouri State University, May 7, 2022.
- 'Fabrication and Characterization of PLD grown  $\text{In}_2\text{O}_3/\text{BTO}$  bi-layered Thin Film FET.' Final project for Materials Synthesis & Characterization Course. May 16, 2022.

- 'UTILIZATION OF LOCALLY PRODUCED STEEL SLAG AS BUILDING MATERIAL'; International Conference on Mechanical, Industrial and Materials Engineering 2019, 18<sup>th</sup> December, 2019, RUET, Bangladesh.

## PUBLICATIONS

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- **Ishrak, Farhan**; Mayanovic, R.A.; Benamara, Mourad; 'Investigations of Size-Dependent Properties of Mn-Co-NiO Based Heterostructured Nanoparticles.' (*manuscript accepted in AIP proceedings*)
- Ria N.S., Momo A.M., **Ishrak F.**, Gulshan F.; 'UTILIZATION OF LOCALLY PRODUCED STEEL SLAG AS BUILDING MATERIAL'; International Conference on Mechanical, Industrial and Materials Engineering 2019.

## WORK EXPERIENCE

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- **NC State University** January 2023- Present  
Graduate Research Assistant (Supervisor: Dr. Bharat Gwalani)
- **Missouri State University** January 2021- December 2022  
Graduate Teaching Assistant
  - Demonstrated strong organizational skills by teaching related theories and instructing undergraduate class of Introduction to Physics-I and Foundations of Physics-I lab courses
  - Attended weekly TA meetings with lab supervisor and fellow TAs to enhance teaching materials (lab manuals), inspect lab instruments to ensure the overall quality of the course
  - Supervised experiments, prepared quizzes, graded lab reports and provided feedback to students
- **Abul Khair Steel Products Limited (AKSPL)** November 2019 - December 2020  
Metallurgical Quality Engineer
  - Checked the pot-chemistry of Zinc and Aluminium alloys for galvanizing sheet steel using an OES spectrometer.
  - Led the quality assurance laboratory of 22 team members for regular testing to ensure physical quality of galvanized sheet.
  - Conducted regular quality inspection and analysis for product development by eliminating manufacturing irregularities such as corrosion, cracks, strength variation, surface decolorization.
  - Documented and compiled paperwork for ISO 9001:2015 certification audit.

## ACTIVITIES AND ACHIEVEMENTS

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- Mentored undergraduate physics students in Physics, Astronomy and Materials Science Help Desk
- Volunteer at Ozarks Food Harvest April 30, 2022, Springfield, MO
- Volunteer at Science Olympiad February 26, 2022, Missouri State University
- Member and Blood donor of BADHAN, BUET zone.
- Mentored ~15 impoverished school students in 2016-2019 in Bangladesh.

## HONORS AND AWARDS

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- Physics and Astronomy Department and Friends Scholarship 2022-2023
- Bangladesh Government Scholarship -Awarded to the top 100 students in the nationwide exam 2012-2014

## REFERENCES

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Dr. Robert A. Mayanovic  
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Missouri State University, Springfield, MO, USA  
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