



Marm B. Dixit

Oak Ridge National Laboratory
 Electrification and Energy Infrastructures
 Division
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 USA

Current Position:

I am currently working in the Emerging and Solid-State Batteries group in the EEID as a Weinberg Distinguished Staff Fellow. My work is focused on understanding and evaluating novel solid electrolyte materials for solid-state batteries.

Education and Employment History:

Work Experience

Jan 2021 - Ongoing **Weinberg Distinguished Staff Fellow**, *Energy and Transportation Science Directorate, Oak Ridge National Laboratory, Oak Ridge, TN USA*. Working on developing practical solutions for high energy density solid-state batteries.

Jan 2020 - Jun2020 **Visiting Graduate Student**, *Advanced Photon Source, Argonne National Laboratory, Chicago, IL USA*. Internship with the Material Physics and Engineering group at the Advanced Photon Source. Worked closely with beamline scientists for developing and implementing advanced diffraction-based imaging methods for solid-state batteries.

Jan 2017 – Dec 2020 **Graduate Research Assistant**, *Vanderbilt University, Nashville, TN USA*. Lead graduate student working on advanced characterization of solid-state batteries to understand the processing-structure-function relationships of solid-state batteries. Detailed achievements:

- Developed microstructure-based understanding of transport and failure mechanisms in solid electrolytes using synchrotron imaging;
- Developed a novel processing method for scalable manufacturing of hybrid electrolytes;
- Involved in identifying research problems and writing research proposals for synchrotron and neutron user facilities;
- Working in collaboration for a cross section of applications: from energy storage to catalysis to separations.

Aug 2013 – Jun 2016 **Jr. Research Fellow**, *IIT Gandhinagar, Gandhinagar, GJ India*. Joined Energy Systems Research Laboratory at IIT Gandhinagar, among the first

staff members recruited. Instrumental in lab design and setup. Detailed achievements:

- Involved in the project of Ethanol Autothermal Reforming - conducting experiments and simulations;
- Involved in the project of Diesel Autothermal Reforming for marine applications - tackling the problem of diesel vaporization;
- Key point of contact for all activities related to lab: equipment and material procurement, handling and inventory;
- Involved in identifying research problems and writing research proposals with detailed time-line, cost breakdown and deliverables

Education History

Jan 2017 – Dec 2020 **Doctor of Philosophy**, *Department of Mechanical Engineering, Vanderbilt University, Nashville, TN USA.*

Aug 2009 – Jul 2013 **Bachelors of Technology**, *Department of Mechanical Engineering, Charotar University of Science and Technology, Changa, GJ India.*

Interests:

Ongoing research interests include energy storage and conversion, electrochemistry, synchrotron/neutron science, imaging, heterogeneous catalysis, and big data and machine learning.

Goals/Ideas for advocacy for the user community:

- Proposal development workshop for graduate students/post-docs during APS user meetings
- Ongoing SLACK channel for graduate/post-doc accessing beamlines (common queries, social chats, potential collaborations)
- Data management and analysis-based hackathons/workshops geared towards training students/post-docs on Python during APS User meetings : basics of Python coding, streamlining processing pipelines, carrying out routine operations automatically
- Online repository of best practices advises for experiments around the ring submitted by users themselves which can be leveraged for experimental design

Honors and Activities:

May 2020 Received Weinberg Distinguished Staff Fellowship, Oak Ridge National Laboratory

May 2020 Finalist for Directors Fellowship, National Renewable Energy Laboratory

October 2019 ECS Travel Award for 236 Electrochemical Society Meeting

September 2019 Electroplating demonstration. Maker Faire 2019, Vanderbilt University. Ideated, organized, conducted science demonstration. Over 100 demonstrations carried out in one day.

December 2018 Shortlisted for Hercules Synchrotron School. Competitive selection of 30 candidates from around the world (could not attend due to scheduling conflicts).

- Summer 2018-2019 Water Splitting and Supercapacitor Demonstration, Vanderbilt Summer Science Academy.
- March 2018 Vanderbilt University Graduate Student Travel Grant
- August 2017 Participant, Nineteenth National School on Neutron and X-ray Scattering, Oak Ridge National Laboratory and Argonne National Laboratory
- August 2017 Participant in the First ECS Hack Day, 232 Electrochemical Society Meeting
- August 2017 ECS Travel Award for 232 Electrochemical Society Meeting
- 2017-2020 Co-President, iLEAD Student Organization, Vanderbilt University. Led the group to win the "Best Intercultural Awareness Program" at the Vanderbilt Awards for Leadership Excellence 2019.