

Ashis Nandy

College of Engineering and Technology
Northern New Mexico College
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ACADEMIC POSITION

February 2018- Present: Associate Professor, College of Engineering and Technology, Northern New Mexico College, Espanola, New Mexico.

February 2012- February 2018: Assistant Professor, College of Engineering and Technology, Northern New Mexico College, Espanola, New Mexico.

EDUCATION

- Ph. D. (2012) Mechanical Engineering GPA 3.93/4
The Pennsylvania State University
University Park, USA
- M. Tech. (2006) Aerospace Engineering GPA 9.5/10
Indian Institute of Technology Kanpur, India (Ranked 1st)
- B.Eng. (2001) Mechanical Engineering 80% (1st Class, Honors)
Jadavpur University, India (Ranked 13th among 135 students)

Doctoral Thesis

A one-dimensional transient two-phase cold-start model is developed to predict the cold-start behavior of a Polymer Electrolyte Fuel Cell (PEFC). The model is used to explore the effect of catalyst layer thickness on the cold-start performance. The model is further extended to explore the three-phase transient dynamics and cell performance in the vicinity of freezing point temperature. Gas purge mechanism, an integral part to the PEFC cold-start operation, is studied using an already established purge model in Star-CD.

RESEARCH INTEREST

Fuel cells, Electrochemical energy systems, Multi-phase flows, Fluid mechanics, Aerodynamics, Thermodynamics, Heat transfer, Computational fluid dynamics, Solar-thermal energy, STEM education.

TEACHING INTEREST

Thermodynamics, Heat transfer, Fluid mechanics, Fluid machinery, Aerodynamics, Compressible flows, Power and refrigeration cycles, Combustion, Engineering mechanics, Strength of materials, Design of machine elements, Engineering Drawing and Design, Solar-thermal applications.

TEACHING AND OTHER PEDAGOGICAL EXPERIENCE

Associate Professor, Feb. 2018-Present, Assistant Professor, Feb. 2012- Feb. 2018,
Northern New Mexico College, Espanola, New Mexico.

- **Courses taught**

- **ME 202:** Engineering Statics, Fall 2012, Fall 2013, Fall 2014, Fall 2015
 - **ME 260L:** Engineering Design II, Fall 2012.
 - **ME 403:** Solar Thermal Applications, Fall 2012.
 - **ME 306:** Dynamics, Spring 2013, Spring 2014, Spring 2015.
 - **ME 301:** Thermodynamics, Spring 2013, Spring 2014.
 - **ME 302:** Mechanics of Materials, Spring 2013, Spring 2015, Spring 2016.
 - **ME 490:** ME Capstone I, Spring 2013.
 - **ME 317:** Fluid Mechanics, Fall 2013, Fall 2014.
 - **ME 318L:** Mechanical Engineering Lab, Fall 2013, Spring 2015.
 - **ME 491:** ME Capstone II, Fall 2013.
 - **ME 320L:** Heat Transfer, Spring 2014.
 - **ME 459:** Advanced Mechanical Engineering Design, Fall 2014.
 - **ENGR 110L:** Introduction to Engineering, Fall 2014, Spring 2015, Fall 2015, Spring 2016, Fall 2016, Spring 2017, Fall 2017, Spring 2018, Fall 2018.
 - **ENGR 115:** Basic Math for Engineering Applications, Fall 2015, Fall 2016.
 - **DRFT 100:** Computer Aided Drafting I, Fall 2015, Spring 2016, Fall 2017, Fall 2018.
 - **MET 201:** Applied Mechanics I, Fall 2016, Fall 2017, Fall 2018.
 - **MET 301:** Applied Mechanics II, Spring 2017, Spring 2018.
 - **MET 302:** Strength and Properties of Materials, Spring 2016, Spring 2018.
 - **MET 303:** Thermodynamics, Fall 2016, Fall 2018.
 - **MET 317:** Fluid Mechanics, Spring 2017.
 - **MET 421:** Heat Transfer, Fall 2017.
 - **MET 498:** Independent Study, Fluid Mechanics, Fall 2017.
 - **EMET 490:** Capstone, Spring 2018.
- Faculty leader for **development and improvement of curriculum** for Electromechanical Engineering Technology program and previous Mechanical Engineering program.
 - Faculty leader for **assessment of program for ABET Accreditation** for the Electromechanical Engineering Technology program. Prepared several assessment reports for Mechanical Engineering and Electromechanical Engineering Technology.
 - Faculty leader for the **development of Mechanical Engineering Laboratories** and integration of laboratory components to coursework.
 - Advised students for Capstone projects: design and fabrication of efficient and low-cost solar oven, solar water heating and distillation system.
 - More than six years of **experience with minority serving institute.**
 - Academic **advisor of 35+ students** (intrusive advisement).

- **Expertise in both mathematical modeling and experimental research.**

INSTRUCTOR

The Pennsylvania State University

- Introduction to thermal sciences (ME 201, Undergraduate) – Spring 2011
Excellent student evaluation: **5.43/7**

TEACHING ASSISTANT

The Pennsylvania State University

- Introduction to Thermal Sciences (ME201, Undergraduate)- Fall 2006, Spring 2008
- Gas Turbines (ME 404)- Fall 2010
- Indoor Air Quality Management (ME 405)- Fall 2010

Indian Institute of Technology, Kanpur, India

- Experiments in Aerodynamics (AE411, Undergraduate Lab)- Fall 2005
- Engineering Graphics (TA101, Undergraduate)- Spring 2006

RESEARCH PROJECTS

- Three-phase transient dynamics and cell performance of a PEFC in the vicinity of freezing point temperature – funded by Sandia National Lab.
- Effect of catalyst layer thickness on the cold-start performance of a PEFC – funded by Sandia National Lab.
- Worked on the development and improvement of purge model to explore the gas purge mechanism in a PEFC using Star-CD - funded by Nissan Motor Company, Japan.
- Experimental study on flow past a circular cylinder with special attention to the phenomenon of drag crisis with and without artificial means of boundary layer transition- Masters Thesis.

TECHNICAL PUBLICATIONS

- **Nandy, A.**, Jiang, F., Ge, S., Wang, C. Y., Chen, K. S., 2010. “Effect of Cathode Pore Volume on PEM Fuel Cell Cold Start”. *Journal of Electrochemical Society*, vol. 157 (5), pp. B726-736. DOI: 10.1149/1.3355867. **(No. of citations : 24)**
- **Nandy, A.**, Jiang, F., Wang, C. Y., Chen, K. S., “Modeling Three-Phase Transients in Polymer Electrolyte Fuel Cells during Post-Cold Start”. *Eighth International Fuel Cell Science, Engineering and Technology Conference*, June 14-16, 2010, Brooklyn, New York, USA. (Conference presentation)
- **Nandy, A., Wang, C. Y.**, “Effect of Water and Heat Transport on Three-Phase Transient Behavior of a PEFC”. *Southwest Emerging Technology Symposium*, April 9, 2016, the University of Texas at El Paso, El Paso, Texas.
- **Nandy, A.**, “Effect of Operating Conditions on Three-Phase Transient Behavior of a PEFC”. *Southwest Emerging Technology Symposium*, April 1, 2017, the University of Texas at El Paso, El Paso, Texas.

- **Nandy, A.**, “Improved Student Learning Through Technology-Assisted, Hands-on Classroom Instructional Strategies at the Early College Level”. *New Mexico STEM Symposium by New Mexico Public Education Department*, June 4, 2016, Albuquerque, New Mexico. (Conference presentation)
 - Lopez I., **Nandy A.**, Crichigno J. “Lessons Learned from an NSF S-STEM Project in a Rural and Hispanic Serving Institution,” *NSF Grantees Session, ASEE Annual Conference*, June, 2018, Salt Lake City, Utah.
 - C. Trevizo, **A. Nandy**. “Modeling Heat Transfer through a Pin Fin”. *Alliance for Minority Participation Conference*, September 30, 2016, New Mexico State University, Las Cruces, New Mexico (Poster presentation)
 - M. Perraglio, **A. Nandy**, C. Aprea. “Modeling Two-Dimensional, Transient Heat Conduction in an Electric Frying Pan” NM STEM STRONG symposium, September 26, 2015, Santa Fe Community College, Santa Fe, New Mexico. (Poster presentation)
 - S. Roybal, E. Ronquillo, **A. Nandy**, U Ricoy, D. Torres. “Modeling the Neuromuscular Junction” *Academic Research, Creativity, and Scholarship Symposium*, May 2015, Northern New Mexico College, Espanola, New Mexico. (Poster presentation)
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GRANTS AWARDED

- **Principal Investigator**, NSF- IUSE program; *Ensuring Diversity & Undergraduate Completion: Enrichment and Retention in Engineering*, “*EDUCERE*” Grant, 2016-2019 (~ \$ 300,000) (awarded)
- **Co- Principal Investigator**, NSF sponsored program; *Pathways for Engineering: Access to Resources for Learning*, “*PEARL*” Grant, 2013-18 (~ \$ 600,000) (awarded)

GRANTS SUBMITTED

- **Grant proposal submission as a Co-PI** for the “Major Research Instrumentation” Program (a NSF grant) titled “MRI: Acquisition of PV Reflectometer - A Reflectance Spectroscopy and Spectral Imaging instrument for Diagnostics of Materials and Devices”. (~\$520,000).
 - **Grant proposal submission as a Co-PI** for the “Minority Science and Engineering Improvement Program” (a DOE grant) titled “EMERALD” (“Enhancing Minority Engineering Retention and Leading in Diversity”) (~ \$ 750,000).
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OTHER SCHOLARLY ACTIVITIES

- **Summer STEM Program Workshop**: Offered a Summer workshop entitled “**Looking Ahead: Engineering and You**” for college and high school students. July 14 through July 31, 2014.
 - **Seminar talk** on “Hydrogen Fuel Cell: Design, Performance and Challenges”- sponsored by Pi-Math Center and LANL Math Project, April 26, 2012.
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PROFESSIONAL DEVELOPMENT ACTIVITIES

- Completed online class in Coursera.org: Python Programming Essentials, offered by Rice University (2018)
- Attended ASEE Annual Conference, Salt Lake City, Utah (June 2018).
- Attended NNMC Mondopad training on April 28, 2017.
- Attended the **EPSCoR workshop and NMSU Lab/Project tour** on July 14, 2016.
- Completed National Instruments **LabVIEW Core I** class, April 18-21, 2016.
- Participated in Northern **STEM Regional Conference** at the Higher Education Center in Santa Fe, April 16, 2016
- Attended **National Conference on Science Education** (NSTA annual conference) in Nashville, TN during March 31-April 3, 2016.
- Successfully completed training (and received certificate) on **SolidWorks Drawings** from MCAD Technologies, November 2015.
- Participated in 3rd Annual Student Symposia by NM STEM STRONG as faculty mentor to students in SFCC on September 26, 2015.
- Successfully completed **Blackboard Collaborate Training** in September 2015.
- Successfully completed and received certificate on **PLC course titled S7-1200 TIA System from Siemens**, September 2015.
- Successfully completed **Blackboard Institute Training course** at NNMC in May 2015.
- Attended the workshop “**Micromessaging to Reach and Teach Every Student**” by Phyllis Baca from SFCC on May 5, 2015.
- Workshop attendance at NNMC on “Utilize search engines to obtain funding from grants and private foundations”- by Dr. Lenny Etlinger, March 13, 2015.
- Successfully completed training (and received certificate) on **SolidWorks Essentials** from MCAD Technologies, February 2015.
- Participated **ABET Fundamentals of Program Assessment** workshop on September 27, 2014 at the Mississippi State University.
- Participated in **STEM faculty professional development workshop** on April 4, 2014 at the Bishops Lodge, Santa Fe (Sponsored by Title III-HSI-STEM).
- Participated in **Dale Carnegie Workshop** titled “Interpersonal Competence: Connect with Others” on January 14, 2014 at NNMC.
- **Online Class in Coursera.org: Nanotechnology- the basics**; offered by Rice University, Nov-Dec, 2013. Secured 95.5% grade and received a verified certificate for completing the course. The course records and the verified certificates can be found at:
<https://www.coursera.org/records/REkLQCMswyyFECpB>
<https://www.coursera.org/signature/certificate/RS5Y5LCWCP>
- Attended “NACK” (Nanotechnology Applications and Career Knowledge) webinar- “Trends in Nano: Program Development” on March 22, 2013.
- Participated in ASME **online workshop on “Probabilistic Design for Reliability”**, February 2, 2013 (5.5 professional development hours).

- Participated in **2012 Mentoring Conference**, University of New Mexico, Albuquerque, NM, October 24-26, 2012.
- Participated in all convocation ceremonies and workshops during convocation weeks

COLLEGE, DEPARTMENTAL AND COMMUNITY SERVICE ACTIVITIES

COLLEGE SERVICE

- **Senator (Faculty Senate) from Engineering**- August 2015- July 2018.
- **Faculty Senate Committee membership:**
 - Scholastic Standards Committee- Spring 2012- Spring 2015.
 - Graduate Curriculum Committee- Fall 2015- Spring 2017.
 - Undergraduate Curriculum Committee-Fall 2016- Spring 2017.
 - Educational Policy Committee- Fall 2012- Spring 2015.
 - General Education Committee- Fall 2017- present.
 - Student Evaluation Committee (Co-Chair)- Fall 2016- Spring 2017.
- **Institutional Committee membership:**
 - Institutional Review Board- Fall 2016 –present.
 - Academic Planning Taskforce- Fall 2013- Spring 2014
 - Strategic Enrollment Management Committee- Fall 2014- Spring 2015.
- **Member, Organizing Committee- Annual Research Symposium (formerly known as ARCSS) at NNMC**- 2015, 2016, 2017, 2018.
- Member, search committee for the Fine Arts Faculty/ Chair, Fall 2016.
- Chair, search committee for EMET faculty, Fall 2017.
- Member, search committee for IET faculty, Spring 2018.

DEPARTMENTAL SERVICE

- Attended all weekly departmental faculty meetings and worked towards departmental policy making, activities, and all other assigned duties.
- Participation in other **recruitment/retention/student learning/outreach activities:**
 - (i) Participated in Phone call campaign for student registration on August 8, 2017.
 - (ii) Pre-Registration day event on May 2, 2017.
 - (iii) Recruitment event and conducted lab tours with prospective students (e.g. Jumpstart tour and hands-on lab activity with students on April 27, 2017)
 - (iv) NNMC 2nd Annual Open House and Career Expo on March 29, 2017
 - (v) NNMC day at the State Capitol on February 21, 2017.
 - (vi) STEM day at legislature in Santa Fe on January 18, 2017.
 - (vii) Attended Roborave (a robotic competition) for recruitment purposes on March 5, 2016, and March 1, 2015 at NNMC Gymnasium.
 - (viii) Participated in the Engineering day (workshop sessions for high school students) on February 24, 2016 and February 19, 2014.

- (ix) Participated in Santa Fe Indian School visit on October 23, 2015, and EVHS visit on October 28, 2015.
- (x) Participated in UNM Taos Transfer Day on April 15, 2015.
- (xi) Participated in 3rd Annual Northern New Mexico “Community” College Fair at Santa Claran Event Center, March 25, 2015.
- (xii) STEM career day (workshop sessions for high school students, promoting engineering career) on February 25, 2015.
- (xiii) NNMU day at the legislature (at the Capitol) on February 18, 2015. Prepared a presentation to showcase the ME program and a demo for interested audience.
- (xiv) Friday Academy instructor: April 10, 2015, May 8, 2015, September 25, 2015, December 11, 2015
- (xv) College wide Registration/Advisement day on December 3 and 4, 2014.
- (xvi) Participated in student recruitment/ outreach activities at Pojoaque Valley High School and McCurdy High School on October 28 and October 29, 2014 respectively.
- (xvii) Engineering student orientation program on August 29, 2014.
- (xviii) Participated in PACCC college and career conference at Santa Claran Hotel at Espanola on April 9, 2014.
- (xix) Participated in student recruitment activity at Santa Fe High School Showcase Fair on January 30, 2014.
- (xx) Northern New Mexico College’s STEM Career Day on November 20, 2013, held at NNMU.
- (xxi) Site visit and discussed possible solar energy project scopes with Ghost Ranch on October 23, 2013.
- (xxii) Participated in student recruitment activity at Espanola Valley High School on October 18, 2013.
- (xxiii) Site visit to PNM’s Solar Energy Prosperity Site in Albuquerque on August 23, 2013.
- (xxiv) Espanola Career Fair on August 30, 2012 held in Santa Claran Hotel, Espanola.
- (xxv) Pojoaque High Career fair on April 27, 2012 held in Pojoaque Valley High School

- **Other departmental services:**

- (i) **Chair, Faculty Search Committee** for the Electromechanical Engineering Technology Program, Fall 2017.
- (ii) Attended the Deans, Chairs and Directors meetings on the behalf of the Chair of College of Engineering and Technology (CET) during Spring 2017 semester.
- (iii) Served in the Search Committee for the CET Administrative Assistant, Spring 2017.

- (iv) Participated in all “PEARL” Grant orientation meetings with scholarship recipients. Attended all “PEARL” Brown Bag Lunches.
- (v) Led an Educational Field Trip to UNM (talks on Graduate programs and lab tours) on April 7, 2017.
- (vi) Conducted an Educational Field Trip to UNM on March 11, 2016.
- (vii) External Advisory Committee meeting on October 3, 2014, and in the Department Retreat on May 5, 2014.
- (viii) Served in the Solar Energy Faculty search committee for the Department of Engineering, Fall 2013.
- (ix) Participated in faculty senate meetings on following dates as a proxy for Dr. Jorge Crichigno during the spring 2012 and fall 2012 semester: May 4, 2012
October 05, 2012, December 13, 2012.

COMMUNITY SERVICE

- Math Instructor, 7th Grade, Pojoaque Valley Middle School, Fall 2017.
- Math Tutor at Espanola Valley High School (Tuesdays, 3:30-4:30 PM) from February through April 2017.
- Volunteer, Renewable Energy Festival (a community event) at NNMC on April 22, 2017.
- Mentored in PVMS Robotic club on November 28, 2016.
- Member, SFCC General Engineering and Engineering Technology Advisory Committee. Fall 2016- present. Attended the Advisory Committee meeting on October 28, 2016.
- Participated in 3rd Annual Symposium by NM STEM STRONG as faculty mentor to students in SFCC on September 26, 2015.
- Volunteer, Solar Collector Workshop (a community event) led by Mr. Robert Dunsmore in Espanola on April 11, 2015.
- Volunteer, Community Event: Helped setting up the solar oven and solar collector and water heating system (previously built) for a community demonstration organized by Mr. Robert Dunsmore, Spring 2014.
- Judge: Supercomputing Challenge Evaluation for middle and high-schools of northern New Mexico, at NNMC, February 16, 2013.

STUDENT ADVISING/MENTORING

- **Academic Advisor to approximately 25 Engineering students each semester.**
- Occasionally advised students from other majors like Mathematics, with Engineering concentration: Michael Ruiz, Jose Pacheco, Melany Cordova.
- **Mentored five AMP (Alliance for Minority Participation) program student participants with undergraduate research projects.**

- Bryan Chacon- Fall 2014
 - Martin Perraglio- Spring 2015
 - Edgar Ronquillo- Spring 2015
 - Cesar Trevizo- Fall 2015
 - Chelsey Montano- Spring 2016
 - **Mentored three CAMP (College Assistance Migrant Program) students.**
 - Roman Padilla- Fall 2015
 - Arthur Martinez- Fall 2015
 - Agustin Mendez- Spring 2017
 - **Other undergraduate students mentored:**
 - Mario Valerio- Spring 2016
 - Elizabeth Browne- Fall 2017 and Spring 2018
 - Laura Romero- Spring 2017 and Fall 2017
 - Kenneth Passmore- Spring 2018
 - Levi Albert- Summer 2018
 - Jason Lewis- Summer 2018
 - **Faculty Mentor/ Advisor to student association:** Attended three NESA (Northern Engineering Student Association) meetings as faculty mentor on March 7, April 3 and September 17, 2014.
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HONORS/ AFFILIATIONS

- **Associate Professor**, Northern New Mexico College
 - Recipient of **Graduate Teaching Fellow** (Instructor) position, Penn State, 2011.
 - Recipient of **National Scholarship** (ranked 64th among 400,000 Examinees), in Secondary Examination (10th grade), West Bengal, India, 1994.
 - Member, ASME, ASEE.
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INDUSTRY EXPERIENCE

2001-03: Engineer, Tata Motors Ltd., India.

- Worked in a cross functional New Product Introduction group for various Tata vehicle projects.
 - Worked in various quality improvement initiative projects. Worked closely with Engineering Research Center of Tata Motors for research and development.
 - Provided support to the Project Management Team in preparing project reports, technical manuals and specifications sheets.
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SOFTWARE AND PROGRAMMING PROFICIENCY

AutoCAD, SolidWorks, STAR-CD, LabVIEW, MATLAB, FORTRAN, C.
