Tanya Das

Policy Interests

Technology; workforce development; STEM education; underserved populations; energy and the environment; transportation; infrastructure; rural communities; immigration; health and healthcare; veteran's affairs

STEM Program Evaluation

Teaching Technical Writing in Undergraduate Chemical Engineering Curriculum May 2016 – June 2017

Synthesized information from focus groups, data analysis, and surveys to recommend interventions for teaching technical writing.

Best Practices in Teaching Design in Undergraduate Mechanical Engineering (ME) Programs July 2016 – Apr. 2017

Co-authored successful grant to interview faculty nationally to identify and recommend best practices in shaping 4-year undergraduate curricula pertaining to teaching engineering design in different institutional settings.

Workforce Development (WFD), American Institute for Manufacturing Integrated Photonics Apr. 2016 – Jan. 2017

Identified interventions and training programs to address workforce needs and skills gaps in the photonics industry at education levels ranging from associate's to doctorate degrees and interviewed industry leaders to identify problems and solutions for successful collaborations between industry and academia in photonics.

Evaluation of Diversity programs at University of Washington Jan. 2016 – Mar. 2016

Analyzed data on retention and graduation rates to determine effectiveness of interventions to help underserved populations succeed in engineering and recommended interventions to further improve degree attainment.

Evaluation of an undergraduate Mechanical Engineering design capstone course May 2015 – Dec. 2015

Designed and implemented teaching improvements in a creative design course. Evaluated effectiveness of improvements through data analysis, surveys, and focus group interviews and recommended changes.

Leadership

OSA/IEEE Photonics Society Student Chapter, External Affairs Chair Aug. 2016 – June 2017

Served as liaison between local community and UC Santa Barbara organizations to plan educational conferences about light-based technologies, seminars, and outreach events for lay audiences.

Beyond Academia Conference Mar. 2015 – June 2016

Founded and organized professional development conference for 200 graduate students with a team of students to help PhDs plan and pursue careers outside of academia.

Graduate Students for Diversity in Science Nov. 2014 – June 2017

Developed training workshop to help underserved students interested in pursuing STEM PhD degrees improve GRE scores, a major deterrent to underrepresented student acceptance into STEM graduate school.

Poetry Workshop at Santa Barbara County Juvenile Probation Center Mar. - June 2014

Founded and led weekly workshops at juvenile probation center to help criminal teens use poetry as an outlet for working through personal issues in a safe and accepting environment.

University of Michigan Solar Car Team Interim Engineering Director May 2009 – Jan. 2010

Organized training for fifty engineers in designing, building, and testing solar car systems.

Science Communication and Outreach

Science Communication Course July 2015

Learned effective techniques for presenting science to non-scientific audiences through a ten-week course.

KCSB 91.9 FM Radio Interview July 2015

Gave interview for three hours about my PhD research and life as a scientist on live radio.

Materials Research Society Meeting Scene Reporter April 2015

Published online reports on a variety of technical talks for a general science audience.

Materials Research Society Science Communication Workshop April 2015

Learned effective methods for written and verbal communication of science to non-scientific audiences.

Santa Barbara Science Fair Judge Mar. 2014

Served as a judge for local junior high school science fair.

Family Ultimate Science Exploration Volunteer 2013 – 2016

Engaged junior high students and their families in hands-on activities about light-based technologies.

Nano-Days Volunteer 2014 – 2015

Taught K-5 students and their families about microscopy techniques used in nanotechnology research.

Science and Engineering Research

Ph.D. research: University of California, Santa Barbara Mar. 2013 – Sept. 2017

Developed a new theoretical framework for designing novel metamaterials, materials with unique light manipulation properties based on nanoparticles, by changing a property of light known as polarization.

Summer Internships

- NASA Jet Propulsion Laboratory, Infrared Research Group July – Sept. 2012
  Experimentally tested and characterized infrared cameras.
- NASA Ames Research Center, Robotics Academy June – Aug. 2009; June – Aug. 2011
  Worked on a team to design and build a lunar rover that conducts scientific experiments on the moon such as sample collection and measurement.

Undergraduate research: University of Michigan, Ann Arbor

- Silicon interferometer device May 2010 – Sept. 2011
  Modeled effects of imperfections on interferometer, a device used to optically characterize materials.
- Undergraduate Research Opportunity Program Sept. 2008 – May 2009
  Programmed a microprocessor to wirelessly report atmospheric data to a host computer.

Education

University of California, Santa Barbara

Ph.D. Electrical and Computer Engineering Mar. 2013 – Sept. 2017

M.S. Electrical and Computer Engineering Sept. 2011 – Mar. 2013

University of Michigan, Ann Arbor

B.S. Electrical Engineering Sept. 2007 – June 2011

Selected Honors and Awards

- Michael Pate Optical Sciences Memorial Scholarship 2016
- UCSB Broida-Hirschfelder Disseratation Fellowship 2016
- AAAS Meeting Student Poster Award in Education 2016
- UCSB Materials Research Lab/DOW Travel Fellowship 2015
- MRS Spring Meeting Student Poster Award in Resonant Optics 2014
- California Space Grant Award 2012

Peer-Reviewed Publications

- **T. Das**, J.A. Schuller, "Dark modes and field enhancements in dielectric dimers illuminated by cylindrical vector beams," Physical Review B, 95, 201111, 2017 – ***Editor's Suggestion, top 5% of papers published in this issue***
- T. Susko, I. Ben-Yaacov, **T. Das**, F. Bullo, L. Lenaburg, "A coupled course design to strengthen multidisciplinary engineering capstone design projects," ASEE Annual Conference, June 2016
- **T. Das**, L. Lenaburg, T. Susko, "Assessment of an Undergraduate Engineering Design Capstone Course" ASEE Pacific Southwest Conference, Apr. 2016
- **T. Das**, P.P. Iyer, R.A. DeCrescent, J.A. Schuller, "Beam engineering for selective and enhanced coupling to multipolar resonances," Physical Review B, 92, 241110, 2015 – ***Editor's Suggestion, top 5% of papers published in this issue***
- J. Foley, A. Itsuno, **T. Das**, S. Velicu, and J. Phillips, "Broadband long-wavelength infrared Si/SiO2 subwavelength grating reflector," Optics Letters, 37, 1523-1525, 2012

Conference Presentations

- **T. Das**, P.P. Iyer, J.A. Schuller, "Beam engineering for selective and enhanced coupling to multipole resonances," SPIE Optics and Photonics, Aug. 2015, San Diego, CA
- **T. Das**, J.A. Schuller, "Engineering light to study multipolar interactions," STEMposium, May 2015, Santa Barbara, CA
- **T. Das**, J.A. Schuller, "Tailoring light to study multipolar light-matter interactions," Materials Research Society Spring Meeting, Apr. 2015, San Francisco, CA
- **T. Das**, J.A. Schuller, "Manipulation of light: Multipole spectroscopy," Materials Research Lab Summer Symposium, Aug. 2014, Santa Barbara, CA

Conference Posters

- **T. Das**, L. Lenaburg, T. Susko, "Assessment of an Undergraduate Engineering Design Capstone Course" 2016 AAAS Annual Meeting, Feb. 2016, Washington, D.C. – ***awarded Honorable Mention in Education***
- **T. Das**, J.A. Schuller, "Engineering light accomplishes controlled manipulation of multipolar light-matter interactions," Materials Research Outreach Program, Feb. 2015, Santa Barbara, CA
- **T. Das**, J.A. Schuller, "Selective excitation and enhancement of multipolar resonances in dielectric nanoparticles," Materials Research Society Spring Meeting, 2014, San Francisco, CA – ***awarded 3rd place in Resonant Optics***
- **T. Das**, J.A. Schuller, "Selective excitation and enhancement of multipolar resonances in nanomaterials," Materials Research Outreach Program, Feb. 2014, Santa Barbara, CA
- **T. Das**, A. Itsuno, J. Phillips, "Modeling Defects in HgCdTe Lateral Collection APDs," American Vacuum Society, Michigan Chapter Spring Symposium, May 2010, Ann Arbor, MI