Bianca C. Datta

http://www.biancadatta.com
305 Memorial Drive, #6081, Cambridge, MA 02139
bdatta@mit.edu | 301-828-7641

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, MEDIA LAB | Master of Science (2016), PhD Candidate, Media Arts and Sciences
Aug 2014 - Expected Graduation 2020 | Cambridge, MA | GPA 5.00

- Dissertation Title: Bio-Inspired Structural Color – The Design and Fabrication of Surfaces for Display and Sensor Technologies. Committee Members: Dr. V. Michael Bove, Jr. (Advisor), Dr. Mathias Kolle (MIT Mechanical Engineering), Dr. Christine Ortiz (MIT Materials Science & Engineering)
- Researching bio-inspired materials, applying advanced lithography and laser-material processing methods, and building tools for simulation-based optimization and design.

UNIVERSITY OF PENNSYLVANIA | Bachelor and Master of Engineering, Major: Materials Science & Engineering
Aug 2010 - May 2014 | Philadelphia, PA |Undergraduate GPA 3.47 • Graduate GPA 3.80 • Dean's List (2013)

- Senior Design Project on Artificial Doping in Self-Assembled Binary Nanocrystal Superlattices
- Resident Advisor and Head of Visual Arts Engagement Program | Rodin College House (2012-2014)
- Head Teaching Assistant, Intro to Engineering, and Nanoscale Materials Lab | UPenn MSE Department (2011-2014)

RESEARCH EXPERIENCE

MASSACHUSETTS INSTITUTE OF TECHNOLOGY | Graduate Research Assistant
Sept 2014-PRESENT | Cambridge, MA | Object-Based Media Group

- Combining optical modeling and fabrication of bio-inspired structural color photonic structures using femtosecond lasers.
- Assessed and analyzed electrorheological substrates for mechanosensitive cells and responsive material systems, adapted and performed rheological and electrical characterization methods, developed protocols in collaboration with a biologist. Prior research on fabrication of near-to-eye devices for holographic video using traditional lithography and laser machining.
- Cleanroom, nanofabrication, materials characterization, and chemical development lab skills, rapid prototyping.
- Supervised two undergraduate researchers over multiple semesters, trained colleagues on safety and lab protocols.
- Master's thesis on perception of materials and application to object communication, and emotive material properties.

3M, MATERIALS RESOURCE DIVISION | Technical Intern
Jun 2013- Aug 2013 | St. Paul, MN

- Synthesized semiconducting quantum dots and performed characterization for industrial applications.
- Conducted in-lab experimentation and analysis, used MATLAB to model optical properties of quantum dots.
- Assisted with design of the manufacturing process.

UPENN CHEMISTRY/MATERIALS SCIENCE DEPARTMENTS | Undergraduate Research Assistant with Dr. Chris Murray: Nanocrystal Synthesis for Solar Cells
Jan 2011 - May 2014 | Philadelphia, PA

- Synthesized and prepared materials, fabricated and measured devices, and applied various instrumentation and characterization techniques: SEM, UV/Vis spectroscopy and flourometer, dip-coaters and spin-coaters, glove box and schlenk-line experiments. Work contributed to a publication in Nature.
- Wrote and secured Penn Undergraduate Climate Action Grant worth $4000 to conduct research.

BROOKHAVEN NATIONAL LAB, DEPARTMENT OF ENERGY | Summer Undergraduate Laboratory Internship: Fabrication and Testing of Sub-micron X-ray Waveguides
June - Aug 2012| Upton, NY

- Prepared and etched silicon substrates for waveguide applications in a cleanroom, performed SEM characterization. Presented poster, technical report, and oral presentation for end of summer symposium.

WORK EXPERIENCE

MIT MASEEH HALL | Graduate Resident Advisor
Sept 2015- PRESENT | Cambridge, MA

- Provide programming and support for around 80 undergraduate students, balance $800 floor budget, collaborate with twelve GRAs and resources across MIT to resolve conflicts, support students and facilitate mediation.
- Foster individual relationships and promote effective personal communication, regular in-service training on issues around diversity and inclusion, safety, health and wellness, and education.

MIT OFFICE OF GRADUATE EDUCATION | Graduate Community Fellow
Sept 2015- PRESENT | Cambridge, MA

- Organize programs to support women across MIT, lead teams of 5-7 students and postdocs. Key events include annual two-day conference for 70 attendees and 25-30 speakers in which faculty discuss the academic journey, and biennial award ceremony recognizing 50 grad women.
- Propose and plan events around challenges facing women in academia, public speaking, and resources to improve the grad experience. Coordinate faculty, staff, and student partners.

NOVA (WGBH) | AAAS Mass Media Fellow
June 2017-Aug 2017 | Boston, MA

- Wrote 18 articles for NOVA Next on topics varying from the impact of the internet of things, to biological bases of color, multi-colored photons, to governance of AI. Broadly worked to improve public understanding and appreciation of science and technology.
- Conducted in-person and phone interviews, performed background research, and presented pitches for news stories.

SELECT PUBLICATIONS AND PRESENTATIONS

PUBLICATIONS

- Cargnello, Matteo, et al. "Substitutional doping in nanocrystal superlattices." Nature 524.7566 (2015): 450.
- Datta, Bianca C., Sundeep K. Jolly, and V. Michael Bove Jr. "Towards inverse design of biomimetic nanostructures exhibiting composite structural coloration," International Society for Optics and Photonics, 2019.
- Datta, Bianca C., et al. "Direct-laser metal writing of surface acoustic wave transducers for integrated-optic spatial light modulators in lithium niobate," International Society for Optics and Photonics, 2017.
- Savidis, Nickolaos, et al. "Progress in fabrication of waveguide spatial light modulators via femtosecond laser micromachining." Advanced Fabrication Technologies for Micro/Nano Optics and Photonics X. Vol. 10115. International Society for Optics and Photonics, 2017.

PRESENTATIONS

- SPIE Photonics West Spring 2019: Inverse design of biomimetic nanostructure exhibiting composite structural coloration (Oral Presentation), Bianca Datta and Sunny Jolly
- Materials Research Society Fall 2018: Direct Laser Writing of Iteratively-Designed Biomimetic Photonic Structures Exhibiting Tailored Disorder (Oral Presentation), Bianca Datta, Sunny Jolly, and V. Michael Bove, Jr.
- Materials Research Society Spring 2017: Mechanosensitive Cell Behavior on Electrorheological Substrates (Oral Presentation), Bianca Datta, Sunanda Sharma, Neri Oxman, and V. Michael Bove, Jr.
- SPIE Photonics West 2017: Direct-laser metal writing of surface acoustic wave transducers for integrated-optic spatial light modulators in lithium niobate (Oral Presentation), Bianca Datta, Nickolaos Savidis, Michael Moebius, Sundeep Jolly, Eric Mazur, and V. Michael Bove, Jr.

HONORS, LEADERSHIP, AND SKILLS

AWARDS

SPIE Optics and Photonics Education Scholarship (2019)
Collamore-Rogers Fellowship (2018)
Bill Mitchell ++ Student Research Fund (2018)
MIT Graduate Student Council Travel Grant (2017)
MIT Graduate Women of Excellence Award (2015)
William R. Graham MSE Senior Design Award | 1st place (2014)
Penn Engineering Exceptional Service Award (2014)

LEADERSHIP AND SERVICE

Minds Matter | Mentor (2016- PRESENT)
Media Lab Diversity Committee | Member (2016-PRESENT)
MIT Students Offering Support (2016-PRESENT)
MIT Graduate Student Council | Diversity Conduit (2018-PRESENT)
UPenn MSE Society | Peer Advisor (2011-2014)

SKILLS

- Cleanroom and nanofabrication experience, materials characterization, electron and optical microscopy, AFM, wet etching, electron beam lithography, laser lithography, chemical development, protocol development, image analysis
- MATLAB, Python, Solidworks, LabView, Adobe Photoshop, InDesign, Illustrator
- Rapid prototyping and fabrication tools, 3-D printing, laser cutting, computer-controlled machining, water-jet cutting, etc.

INTERESTS

Running (running my 8th half marathon in October), writing, ceramics, former bartender, strong interest in sustainability