Tahmid Hassan Talukdar

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Research Interests

- Optical biosensors for rapid diagnosis and detection of biomarkers
- Metasurfaces and flat optics
- Silicon photonics, porous silicon photonics

Education

- Ph.D. Student in Electrical Engineering, Aug 2017 – Aug 2023
  Clemson University, Clemson, SC
  Dissertation: *TBD*
  Advisor: *Dr. Judson D. Ryckman*
- Master of Science in Electrical Engineering Dec 2019
  Clemson University, Clemson, SC
- Bachelor of Science in Electrical & Electronic Engineering Apr 2016
  Shahjalal University of Science & Technology, Sylhet, Bangladesh

Work and Research Experience

- **Graduate Research Assistant** Aug '17 - Present
  Nanophotonics Lab | Dept of ECE, Clemson University
  Funded by: National Science Foundation (NSF)
- **Visitor / User** N/A
  CNMS, Oak Ridge National Lab, Oak Ridge, TN
  Access from a research proposal allow me to visit here for nanofabrication.
- **Lecturer** Feb '17 – Aug '17
  Department of Computer Science and Engineering
  Sylhet Engineering College, Sylhet, Bangladesh.

Publications

Google Scholar: https://scholar.google.com/citations?user=DD_y9xYAAAAJ&hl=en

Peer Reviewed Journal Papers (Reversed Chronological Order):

[J1] Tahmid H Talukdar, Bria McCoy, Sarah K Timmins, Taufiquar Khan, Judson D Ryckman "Hyperchromatic structural color for perceptually enhanced sensing by the naked eye" in *Proceedings of the National Academy of Sciences* (Nov 2020). (Impact factor = 9.4)

[J2] Tahmid H Talukdar, Judson D Ryckman "Multifunctional focusing and accelerating of light with a simple flat lens" in *Optics Express* (2020). (Impact factor = 3.669)

[J3] Tahmid H Talukdar, Julius C Perez, Judson D Ryckman "Nanoimprinting of refractive index: Patterning subwavelength effective media for flat optics" in *ACS Applied Nano Materials* (2020). (Impact factor = Under calculation. Estimated ~ 3.9)

[J4] Tahmid H. Talukdar, Gabriel D. Allen, Ivan Kravchenko, Judson D. Ryckman "Single-mode porous silicon waveguide interferometers with unity confinement factors for ultra-sensitive surface adlayer sensing" in *Optics Express* (2019). (Impact factor = 3.669)

Under Preparation Journal Papers/Projects:

[1] Tahmid H Talukdar, Ivan Kravchenko, Judson D Ryckman "Ultra high figure of merit biosensing using dispersion engineered porous silicon waveguides"

[2] Tahmid H Talukdar, Judson D Ryckman "Seeing DNA monolayers with the naked eye using hyperchromatic structural color thin film porous silicon sensors"

[3] Tahmid H Talukdar, Judson D Ryckman "Enhancing the extinction ratios of a thin film porous silicon Fabry Perot for ultra-high colorimetric sensitivity"

[4] Tahmid H Talukdar, Judson D Ryckman "Nanoimprinting microspheres on porous silicon to realize low NA scalable flat lenses"

Patents

[1] Judson Ryckman, Gabriel Allen, William Frederick Delaney, Tahmid H Talukdar "Porous waveguide sensors featuring high confinement factors and method for making the same" in *US Patent App. 16/561,093 (Patent Pending)*

Conference Proceedings, Talks & Presentations

[2020] Conference on Lasers & Electro-optics (CLEO), Talk/Presentation
Title: *Ultra-Sensitive and High Figure of Merit Interferometric Biosensors Using Dispersion Effects in Porous Waveguides.*

[2020] Conference on Lasers & Electro-optics (CLEO), Talk/Presentation
Title: *Patterning Refractive Index on the Surface of a Chip by Direct Nanoimprinting.*

[2020] Porous Semiconductors Science and Technology Conference (Postponed due to COVID)
Title: *Hyperchromatic structural color: perceptually enhanced biosensing by the naked eye or smartphone*

[2020] Porous Semiconductors Science and Technology Conference (Postponed due to COVID)
Title: *Nanoimprinting refractive index using mesoporous silicon substrates*

[2020] Porous Semiconductors Science and Technology Conference (Postponed due to COVID)
Title: *High figure of merit interferometric sensors: exceeding the sensitivity of bulk porous silicon via waveguide dispersion*

[2021] Conference on Lasers & Electro-optics (Submitted)
Title: *Focusing and Accelerating Light with the Same Flat Lens.*

[2021] Conference on Lasers & Electro-optics (Submitted)
Title: *Hyperchromatic Structural Color for Perceptually Enhanced Colorimetric Sensing by the Naked Eye.*

Research Mentorship

- Clemson Summer Undergraduate Research Experience (SURE) Program. Funded by NSF.
  Mentored 2 undergraduate students:
  - *Julius C. Perez, UCSD. Summer 2019.*
  - *Viviana Arrunategui Norvick, Brown University. Summer 2018.*
- Charles H Townes Optical Science and Engineering Summer Program.
  - *Bria McCoy. Summer 2019.*
- Graduate Students
  - *Nithesh Kumar, MS Student, Fall 2020 – present*
  - *Anna Hardison, MS Student, Fall 2020 – present*

Professional Activities, Leadership & Services

Peer Reviewer
- Springer Nature – Journal of Electronic Materials (2 invited reviews)
- Optics Letters (assisted PI as a reviewer)
- Advanced Optical Materials (assisted PI as a reviewer)

Student Member
- *Optical Society of America (OSA)*

Professional/Industrial Training