

Stanford



Mohammad Zaman

Ph.D. Student in Electrical Engineering, admitted Autumn 2014

Bio

HONORS AND AWARDS

- Centennial Teaching Assistant Award Winner, Stanford University (June, 2019)
- Robert S. Hilbert Memorial Design Competition Winner, Synopsys (Aug, 2018)
- James F. Gibbons Outstanding Student Teaching Award in Electrical Engineering, Stanford University (June 18, 2017)
- Departmental Fellowship, Department of Electrical Engineering, Stanford University (Sept. 2014)

EDUCATION AND CERTIFICATIONS

- MS, Bangladesh University of Engineering and Technology , Electrical and Electronic Engineering (2011)
- BS, Bangladesh University of Engineering and Technology , Electrical and Electronic Engineering (2009)

STANFORD ADVISORS

- Lambertus Hesselink, Doctoral Dissertation Advisor (AC)
- Shanhui Fan, Doctoral Dissertation Reader (AC)
- Olav Solgaard, Doctoral Dissertation Reader (AC)
- Mark Brongersma, Doctoral Dissertation Reader (AC)

SERVICE, VOLUNTEER, AND COMMUNITY WORK

- Member, Technical Committee for evaluating radiation hazards from commercial roof-top cellphone towers in Bangladesh (2013)
- Guest Lecturer (2011 - 2012)
- Treasurer (January 2012 - December 2012)
- Member (2012)

PERSONAL INTERESTS

Amateur Radio (License: Amateur extra, Call sign: AE6AZ)

Chess

Reading

Astronomy

LINKS

- My Website: <http://web.stanford.edu/~zaman/>
- Research group website: <https://hesselink-lab.stanford.edu>

- Google scholar page: <https://scholar.google.com/citations?user=JdGaufUAAAAJ&hl=en&oi=ao>
- LinkedIn page: <https://www.linkedin.com/in/zaman13/>
- GitHub page: <https://github.com/zaman13>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research focuses on trapping and controlled manipulation of sub-micron sized particles. The work included modeling, fabrication and testing of chips that employ optical forces and/or dielectrophoretic forces to trap and transport nanoparticles. Our goal is to develop lab-on-a-chip systems for biomedical and chemical applications.

PROJECTS

- Plasmonic trapping and manipulation of nanoparticles - Stanford University (9/1/2014 - present)
- Dielectrophoretic trapping - Stanford University (August 1, 2015 - present)
- Adjoint optimization - Stanford University (March 1, 2016 - December 1, 2016)
- Microfluidic system design for droplet generation - Stanford University (June 1, 2017 - present)
- On chip system for small volume biochemistry - Stanford University (June 1, 2017 - present)

LAB AFFILIATIONS

- Lambertus Hesselink, Hesselink Lab (10/1/2014)

Teaching

COURSES

2019-20

- Modern Optics: EE 236A (Aut)

Professional

WORK EXPERIENCE

- Research Assistant - Stanford University (June 22, 2015 - present)
- Teaching Assistant - Stanford University (January 9, 2017 - March 17, 2017)

Publications

PUBLICATIONS

- **Solenoidal optical forces from a plasmonic Archimedean spiral** *PHYSICAL REVIEW A*
Zaman, M., Padhy, P., Hesselink, L.
2019; 100 (1)
- **Fokker-Planck analysis of optical near-field traps.** *Scientific reports*
Zaman, M. A., Padhy, P., Hesselink, L.
2019; 9 (1): 9557
- **Near-field optical trapping in a non-conservative force field.** *Scientific reports*
Zaman, M. A., Padhy, P., Hesselink, L.
2019; 9 (1): 649
- **Extracting the potential-well of a near-field optical trap using the Helmholtz-Hodge decomposition** *APPLIED PHYSICS LETTERS*
Zaman, M., Padhy, P., Hansen, P. C., Hesselink, L.

2018; 112 (9)

- **Capturing range of a near-field optical trap** *PHYSICAL REVIEW A*
Zaman, M., Padhy, P., Hesselink, L.
2017; 96 (4)
- **Dielectrophoresis-assisted plasmonic trapping of dielectric nanoparticles** *PHYSICAL REVIEW A*
Zaman, M. A., Padhy, P., Hansen, P. C., Hesselink, L.
2017; 95 (2)
- **In-plane near-field optical barrier on a chip** *OPTICS LETTERS*
Padhy, P., Zaman, M., Hesselink, L.
2019; 44 (8): 2061–64
- **A semi-analytical model of a near-field optical trapping potential well** *JOURNAL OF APPLIED PHYSICS*
Zaman, M., Padhy, P., Hesselink, L.
2017; 122 (16)
- **On the substrate contribution to the back action trapping of plasmonic nanoparticles on resonant near-field traps in plasmonic films** *OPTICS EXPRESS*
Padhy, P., Zaman, M., Hansen, P., Hesselink, L.
2017; 25 (21): 26198–214
- **Adjoint method for estimating Jiles-Atherton hysteresis model parameters** *JOURNAL OF APPLIED PHYSICS*
Zaman, M. A., Hansen, P. C., Neustock, L. T., Padhy, P., Hesselink, L.
2016; 120 (9)
- **Optimization of multilayer antireflection coating for photovoltaic applications** *OPTICS AND LASER TECHNOLOGY*
Sikder, U., Zaman, M. A.
2016; 79: 88-94
- **Application of Taguchi's method to optimize fiber Raman amplifier** *OPTICAL ENGINEERING*
Zaman, M. A.
2016; 55 (4)
- **Bouc-Wen hysteresis model identification using Modified Firefly Algorithm** *JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS*
Zaman, M. A., Sikder, U.
2015; 395: 229-233