

ILWOO SEOK, *Ph.D, P.E.*

Associate Professor of Mechanical Engineering
Arkansas State University (A-State)

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ACADEMIC EXPERIENCE

- Arkansas State University**, Jonesboro, AR, **Associate Professor (Tenured)** since Jun. 2016
Assistant Professor 2010 – 2016
- Research interests: Advanced manufacturing and materials science, micro/nano-technology, optics, biotechnology, and energy devices.
 - Teaching expertise: Dynamics, mechatronics, machine design, mechanical system design, finite element analysis, micro/nano-manufacturing, materials science and engineering.
- University of California, Los Angeles, CA**, **Research Assistant** 2005 – 2010
- Research project participated: Nano manufacturing for efficient solar energy utilization, structural integration and multifunctional characteristics of solar cells and batteries (NSF and AFOSR), Optimal and stochastic control for air traffic systems (NASA AMES)
- Hanyang University**, Korea, **Graduate Research Assistant** 1997 – 1999
- Research topics: Design and optimization of mechanical components using finite element method and design of experiment approach.

INDUSTRIAL EXPERIENCE

- Hyundai Motors**, R&D center, S. Korea, Senior Engineer 2004 – 2005
- Design, optimization, and performance development of A/T transmission.
 - Enhancement of noise and vibration performance, and design for improving the reliability of part elements.
- Samsung Electro-Mechanics**, Mobile R&D center, S. Korea, Research Engineer 2002 – 2004
- Mechanical designer in the task force team to develop micro camera modules for mobile devices.
 - Mechanical designer for the high-speed BLDC motor for copier machines using aero dynamic pressure bearing.
 - Dispatched engineer for industry-academic collaborative research to Penn. State University, PA.
- BOSCH**, R&D center, S. Korea, Engineer 1999 – 2002
- Project R&D engineer to design and develop electro-magnetic motors for automotive.
 - Appointed as the specialist in finite element analysis and design of experimental engineering.
- Part-time**
- Irell & Manella Law Firm, Los Angeles, CA., Technical Consultant 2008 – 2009
- Engineering data collection and perusing solutions against patent conflicts among LED display companies.
- PowerMems Technology, Cupertino, CA., Mechanical Designer 2007 – 2008
- Design and analysis of innovative energy harvesting devices as a mechanical designer.
- Poongjeong Inc., Gyeonggi-do, S. Korea. Technical Consultant 1997 – 1998
- Technical consulting with computer aided engineering and optimization for automotive rear-view mirror.

EDUCATION

- Doctor of Philosophy, Mechanical Engineering Jun. 2010
University of California, Los Angeles (UCLA)
- *Research*: Design and advanced manufacturing using micro/nanofabrication, mathematical modeling and simulation
 - *Dissertation*: Improvement of photovoltaic performances using micro/nanomanufacturing technology (Advisor: Dr. Thomas Hahn)

Master of Science, Mechanical Design Engineering

Feb. 1999

Hanyang University, Korea

- *Research*: Design of Optimization for Mechanical Structure Engineering
- *Thesis*: Simplification of larger scale structures using optimization techniques (Advisor: Dr. GJ Park)

Bachelor of Science, Mechanical Engineering

Feb. 1997

Hanyang University, Korea

AWARDED GRANTS AND FUNDING

External

- PI* **Arkansas Bioscience Institute (ABI)**, ‘Interdisciplinary Research integrating Micro-Technology for improved DNA capture/detection in Food Industry Diagnostics’, (2019-2021, \$100k)
- PI* **Arkansas Bioscience Institute (ABI)**, ‘Interdisciplinary study for microfabrication of a novel in-field biosensor aimed at speciation of food products’, (2015-2016, \$84.8k)
- Co-PI* **NSF/MRI**, ‘MRI: Acquisition of an Atomic Force Microscope (AFM) for Research to Evaluate Nano-scale Properties of Materials’, (CMMI-1429690, 2014-2017, \$272k)
- PI* **KAERI (Korean Atomic Energy Research Institute)**, ‘Efficient Seismic Analysis Methodology for ITER Tritium Storage and Delivery System and Bed Structures’, (2013-2014, \$20k)
- PI* **Arkansas Space Grant Consortium**, ‘Performance and Cost-Efficient Photovoltaic Thin Film Materials and Surface-Energy-Driven Nanostructures for Next Generation Wing Structures’, (#ASU 21907, 2011-2012, \$7.4k)
- PI* **NSF/MRI**, ‘Acquisition of a Mask Aligner for Micro/Nano-Fabrication Research at Arkansas State University’, (CMMI-1229404, 2012-2014, \$300k)
- PI* **Arkansas Space Grant Consortium (ASGC)**, ‘Application of Thin Film Photovoltaic Cells with Embedment onto Aerial Vehicle Wings’, (#ASU22088, 2012-2013, \$9k)

Internal or Undergraduate Research Mentoring

- Mentor* **A-State Student Research & Creative Grant Competition**, ‘Development of Solid-State Battery Storage using Advanced Manufacturing’, Office of Student Research in RTT at A-State (2020, \$1k)
- Mentor* **Arkansas State Student Undergraduate Research Fellowship (SURF)**, ‘Fabrication of Nanostructures using Advanced Manufacturing Process’, Arkansas Department of Higher Education (2019, \$4k)
- Mentor* **ASSET Initiative Summer Research Internship Program**, ‘Advanced Thermoelectric Materials and Devices using Microfabrication’, (2014, \$6.4k)
- PI* **Faculty Research Award**, ‘Building up the Micron-Sized 3-D Structures using Micro and Nanofabrication, Arkansas State University (2013, \$2.5k)
- Mentor* **Arkansas State Student Undergraduate Research Fellowship (SURF)**, ‘Improvement of photovoltaic performance of dye sensitized solar cell with the integration of nanostructures’, (2013, \$4k)
- Mentor* **ASTATE Office of Research and Technology Transfer (ORTT) Initiative**, ‘Fabrication of Nanowires using Anodized Aluminum Oxidation and Micro-fabrication for Bio-sensors’, (2013, \$4k)
- PI* **NSF EPSCoR RII Grant ‘Arkansas ASSET Initiative**, ‘CZTS Based Thin Film Solar Cells Fabricated by All-Solution Processing and Pulsed Light Crystallization’, (#EPS-1003970, 2012, \$4k)
- Mentor* **ASTATE Office of Research and Technology Transfer (ORTT) Initiative**, ‘The fabrication of nano-scale templates using anodized aluminum oxidation’, (2012, \$4k)

TEACHING ACTIVITIES AND EXPERIENCE

@ Arkansas State University

2010-present

- *Program and Course Development*
 - o Program development as committee: Master of Science in Engineering (MS in Engr)
 - o New course development:
 - ENGR 4613: **Introduction to Mechatronics**
 - ENGR 6033: **Micro and Nanomanufacturing**

- ENGR 6123: **Engineering Optimization**
- ENGR 6133: **Materials Science and Engineering**
- *Taught courses:*
 - ENGR 1402: **Concepts of Engineering** (Fall-2019)
 - ENGR 2411: **Lab for Mechanics of Materials** (Spring-2014)
 - ENGR 2413: **Mechanics of Materials** (Summer-2016)
 - ENGR 3423: **Dynamics** (Fall-2010, 2017, Spring/Fall-2013, Summer/Fall-2014, 2019, Spring/Summer- 2015, 2016, 2017, 2018)
 - ENGR 3471: **Lab. For Fluid Mechanics** (Fall-2014, 2015, 2016)
 - ENGR 3473: **Fluid Mechanics** (Fall-2014, 2015, 2016)
 - ENGR 4413: **Engineering Problem Solving** (Spring-2016)
 - ENGR 6033: **Micro and Nanomanufacturing** (Spring-2013, 2014)
 - ENGR 6133: **Materials Science and Engineering** (Fall-2013)
 - ME 4523: **Introduction to Finite Element Analysis** (Spring-2014, 2015, 2016, 2017, 2018, 2019)
 - ME 4543: **Machine Design** (Fall-2017, 2018)
 - ME 4573: **Mechanical System Design** (Spring-2018, 2019)
 - ME 4613: **Introduction to Mechatronics** (Fall-2015, 2016, 2017, 2018, 2019)
- *Supervision of Senior/Capstone Design – ENGR 4463/4482:*
 - Autonomous robot for materials cart (2020 Spring/Fall)
 - Design and Fabrication of Human Powered Vehicle (Fall 2018, Spring 2019)
 - Conveyor belt design for preventing of material loss with Nestle USA (Fall 2018, Spring 2019)
 - Fire preventing robot (Fall 2017, Spring 2018)
 - Wind turbine blade surface matting for LM Wind Power Co. (Fall 2016, Spring 2017)
 - Design and manufacturing of material cart system for Hytrol Co. (Fall 2015, Spring 2016)
 - Umbrella dewetting machine (Spring/Fall 2014)
 - Hippotherapy mounting devices (Spring/Fall 2014)

@ University of California at Los Angeles

2005-2010

- Teaching assistant: MAE 182B: Engineering Math., MAE 172: Control System Design Lab., and MAE 166C: Design of Composite Structures.

SERVICE ACTIVITIES

Arkansas State University:

- University Calendar Committee 2019-present
- Fulbright Honor Scholarship Committee 2013-2016
- Student Research Advisory Committee 2015-2016
- General Education Committee 2012-2017

College of Engineering and Computer Sciences:

- Ad-hoc College Workload Committee (Chair) 2019-2020
- ABET Outcomes No. 7 (Chair) 2018-present
- Engineering PRT Committee 2019-present
- Engineering Curriculum Committee 2014-present
- FE Exam Review and advising (Engineering Dynamics) 2012-present
- Faculty Search Committee 2012, 2016, 2018 (as chair), 2020
- Master of Science in Engineering Committee 2010-2019
- Industries Relationship Committee (IRC) 2014-2017
- Engineering Marshall for Commencement Ceremony Summer in 2014, 2015, 2018, 2019

Professional:

- Director, Micro/Nano-Manufacturing (MINAM) Laboratory
- Participated three times of NSF proposal panel reviewers

- Co-Editor of Journal of Engineered Science - ISSN: 2576-988X (print), 2576-9898 (electronic)
- Reviewer of multiple peer-review journals and conference proceedings:
 - o Nanoscience and Nanotechnology Letters, Nuclear Engineering and Design, Finite Elements in Analysis and Design, Engineered Science, Biomedical Materials Research, Journal of Alloys and Compounds, and so on.
- Conference session Chair/Judge:
 - o SPIE NDE/Smart Materials
 - o Arkansas Undergraduate Research Conference (AURC): Session chair
 - o Create @ State Conference: Session chair, Judge
 - o Northern East Arkansas Science Fair (NEARSF) judge
- Membership of engineering association: ASME, IEEE, SAE, SPIE

PUBLICATION

JOURNALS (Peer-Reviewed)

(* as main or corresponding author, _ co-authored advising students)

1. Li Lei, Ran Yan, Shougang Chen, Xiangping Hao, Wenwen Dou, Hu Liu, Zhanhu Guo, Dan Kilula, ***Ilwoo Seok**, (2020), 'Narrow pH Response Multilayer Films with Controlled Release of Ibuprofen on Magnesium Alloy', *Materials Science and Engineering: C*, (In-press) (doi.org/10.1016/j.msec.2020.111414)
2. Zhiyun Wang, Bin Liu, Peikang Bai, Zhanyong Zhao, Haili Wang, Xiaojing Wang, Tao Ding, Mengyao Dong, Jincheng Fan, **Ilwoo Seok**, Zhanhu Guo, (2020) 'Influence of Rhenium and Wolfram on Microstructures and Performances of Selective Laser Melted GH4169 Nickel-Based Alloy', *Emerging Materials Research*, 9(3), 1-11, (doi.org/10.1680/jemmr.19.00147)
3. Meiyang Yu, Teng Yu, Shougang Chen, Zhanhu Guo, ***Ilwoo Seok**, (2020), 'A Facile Synthesis of Ag/TiO₂/rGO Nanocomposites with Enhanced Visible Light Photocatalytic Activity', *Engineered Science, Materials and Manufacturing*, 7, 64-69 (doi.org/10.30919/esmm5f712)
4. Yuan, H., Peng, H., Guan, J., Liu, Y., Su, R., Guo, Z., Chen, Y., Hu, Q., Yuan, B., Wu, H., Kilula, D., ***Seok, I.**, (2020) 'Photodegradation of gaseous toluene by vacuum ultraviolet light: performance and mechanism', *Engineered Science*, 9, 68-76 (<http://doi.org/10.30919/es8d910>)
5. Li, Y., Lv, L., Wang, W., Zhang, J., Lin, J., Zhou, J., Dong, M., Gan, Y., **Seok, I.**, Guo, Z., (2020) 'Effects of chlorinated polyethylene and antimony trioxide on recycled polyvinyl chloride/acryl-butadiene-styrene blends: flame retardancy and mechanical properties', *Polymer*, (In-press) (<http://10.1016/j.polymer.2020.122198>)
6. Xiang Lu, Huanyu Liu, Vignesh Murugadoss, **Ilwoo Seok**, Jintao Huang, Jong E. Ryu, Zhanhu Guo, (2020) 'Polyethylene Glycol/Carbon Black Shape-Stable Phase Change Composites for Peak Load Regulating of Electric Power System and Corresponding Thermal Energy Storage', *Engineered Science*, 9, 25-34, (<http://doi.org/10.30919/es8d901>)
7. Gu, H., Zhou, X., Lyu, S., Dong, M., Wu, S., Pan, D., Wei, X., **Seok, I.**, Wei, S., (2019) 'Magnetic nanocellulose magnetite aerogel for easy oil adsorption', *Journal of Colloid And Interface Science*, 560 pp. 849-856, (<http://doi.org/10.1016/j.jcis.2019.10.084>)
8. Izadyar, Anahita; Tran, Uyen; **Seok, Ilwoo**; Hood, Elizabeth, (2019) 'Recombinant Mn Peroxidase from Corn Grain Has an Excellent Electrocatalytic Effect in a Designed Amperometric Biosensor to Detect Hydrogen Peroxide at Low Concentrations', *ACS Sustainable Chemistry & Engineering*, 7 (24), 19434-19441, (<http://doi.org/10.1021/acssuschemeng.9b04216>)
9. ***Ilwoo Seok**, Akta Al-Hossain, Mohammad Waliullah, Jong Eun Ryu, (2019) 'Fabrication of Nano-patterned Arrays Using Pulsed Light Technique', *Engineered Science*, (7) 59-64 (<http://doi.org/10.30919/es8d506>)
10. Muhammad Idrees; Saima Batool; Qiang Zhuang; Jie Kong; **Ilwoo Seok**; Jiaoxia Zhang; Hu Liu; Vignesh Murugadoss; Qiang Gao, (2019), 'Achieving Carbon-rich Silicon-containing Ceramic Anode for Advanced Lithium Ion Battery', *Ceramics International*, 45(8) 10572-10580 (<https://doi.org/10.1016/j.ceramint.2019.02.123>)
11. Md Didarul Islam, Hamad Al Yassi, Mengyao Dong, Daniel S. Choi, **Ilwoo Seok**, Chuntai Liu, Zhanhu Guo, and Jong Eun Ryu, (2019), 'Hierarchical Assembly of CuO Nano-dandelions on 3-D Printed Template', *Engineered Science*, 6, pp. 86-89 (<http://doi.org/10.30919/es8d503>)

12. *Ilwoo Seok, Hyunjung Kim, Gyungsu Byun, (2012) ‘Structural optimization of a Cu(In, Ga)Se₂ thin film solar cell using numerical simulation and design of experiment techniques’, *Journal of Mechanical Science and Technology*, Vol.26 (8), pp. 2557-2563 (<http://doi.org/10.1007/s12206-012-0637-7>)
13. K. W. Lee, **I. W. Seok**, G. J. Park, (2001) ‘The development for Simplified FE modeling techniques using Optimization’, *The Journal of the Korean Society of Mechanical Engineering* (KSME), Vol.25 (1)

CONFERENCE PROCEEDINGS (Peer-Reviewed)

1. *Ilwoo Seok, (2016) ‘Development of nanofabrication process for cost/time-effective nano-island patterns and optical application’, *Proceedings of Korean-American Scientists and Engineers Research Conference*, Vol 1 (210)
2. *Ilwoo Seok, Carson Munn, Shivan Haran, (2013) "Fabrication of CZTS Based Thin Film Solar Cells Fabricated by All-Solution Processing and Pulsed Light Crystallization", *Proceedings of SPIE, Smart Structures and Materials*, Vol. 8691 (46)
3. *Ilwoo Seok, Jordan Falls, Shivan Haran, (2013) ‘Fabrication of nano-island structures and application to solar cells’, *Proceedings of SPIE Smart Structures and Materials*, Vol. 8692 (18)
4. *Ilwoo Seok, S. K. Kim, S. Dhage, H. Thomas. Hahn, (2009) ‘Design and optimization on CIGS thin film solar cell using numerical and design of experimental approach’, *Proceedings of ASME 3rd International conference on Energy sustainability*, Vol. 1, pp. 999-1003
5. Jason L. Speyer, **Ilwoo Seok**, Andre Michelin, (2008) ‘Decentralized Control Based on the Value of Information in Larger Vehicle Arrays’, *Proceedings of American Control Conference*, pp. 5047-5054, 10.1109/ACC.2008.4587294
6. K. W. Lee, **I. W. Seok**, G. J. Park, (1999) ‘Simplification of Structures using Optimization Techniques’, *The Proceeding of the Korean Society of Automotive Engineering (KSAE)*, Vol.6, pp. 25-26.

CONFERENCE (Oral/Poster Presentation) AND INVITED TALK

1. *Ilwoo Seok, ‘Surface engineering with patterned structure with non-lithographic fabrication’, Kennesaw State University, Invited talk of video conferencing, Apr. 10, 2020
2. Dan Kiula, *Ilwoo Seok, ‘Water Desalination using Silver Dewetted CNT Materials and Microfluidic Channels’, 10th Create@STATE, Jonesboro, AR, 22-24 April, 2020
3. Rebecca Chen, *Ilwoo Seok, ‘Nano-pattern plate for detection of food fraud’, 2019 Statewide ABI (Arkansas Biosciences Institute) Research Symposium, Jonesboro, AR, 25 Sep., 2019
4. Ilwoo Seok, ‘Nanofabrication and its application’, Invited talk at Inha University, Korea, 30 July, 2019
5. Rebecca Chen, *Ilwoo Seok, ‘DNA Entrapment Using Light-Matter Interaction in Nano-patterned Arrays’, 9th Create@STATE, Jonesboro, AR, 15-17 April, 2019
6. Dustin Tran, Wael Alqahtani, *Ilwoo Seok, ‘Micro/Nano-Scale 3D Printing Technology with Two Photon Lithography’, 9th Create@STATE, Jonesboro, AR, 15-17 April, 2019
7. Lindsey Powell, Maureen Dolan, *Ilwoo Seok, ‘Something’s Fishy: Developing a DNA Isothermal Amplification Technology for Discriminating Related Fish Species in Fighting Food Fraud’, National Conference for Undergraduate Research (NCSU), Memphis TN, 8 Apr, 2017
8. *Ilwoo Seok, ‘Fabrication of nano-scale particle arrays using dewetting process and its application to bio- and optic-devices’, Invited talk at Korea Institute of Materials Science, June 10, 2015
9. *Ilwoo Seok, ‘Fabrication of nano-scale particle arrays using dewetting process and its application to bio- and optic-devices’, Invited talk at Korea National University of Transportation, June 7, 2015
10. *Ilwoo Seok, ‘Introduction to Solar Cell’, Invited talk at Korea Polytechnic University, June 1, 2015
11. Stephanie Saenz, *Ilwoo Seok, ‘Fabrication of Miniaturized Thermoelectric Devices as a Renewable Energy Harvesting Source’, 2015 Undergraduate Research Poster at the Arkansas State Capitol, Feb. 11, 2015
12. Jordan Falls, *Ilwoo Seok, ‘Nano-island Structures and Improvement of Solar Cell Performances’, Conference Create@STATE, Jonesboro, AR, Apr. 11, 2013
13. Jonathan Cole, *Ilwoo Seok, ‘Synthesis of Metallic Nano-Wires using Nanoporous Templates’, Conference Create@STATE, Jonesboro, AR, Apr. 11, 2013
14. Carson Munn, *Ilwoo Seok, ‘Cu₂ZnSnS₄ Thin Film Solar Cells by Electrochemical Deposition’, SPIE Smart Structures and Materials + Nondestructive Evaluation and Health Monitoring, San Diego, CA, Mar. 10-14, 2013

15. Jordan Falls, *Ilwoo Seok, “Nano-Island Structures Fabrication using Thermal Energy Driven Dewetting”, SPIE Smart Structures and Materials + Nondestructive Evaluation and Health Monitoring, San Diego, CA, Mar. 10-14, 2013
16. Carson Munn, Jonathan Cole, Kenneth Thompson, *Ilwoo Seok, “Fabrication of Nano-Templates Using Anodized Aluminum Oxidation for Nano-wire Array Applications”, ASME International Mechanical Engineering Congress and Exposition, Huston, TX, Nov 9-15, 2012
17. Carson Munn, *Ilwoo Seok, “CZTS Based Thin Film Solar Cells Fabricated by All-Solution Processing and Pulsed Light Crystallization”, ASME International Mechanical Engineering Congress and Exposition,, Huston, TX, Nov 9-15, 2012.
18. Brittany Kelly, *Ilwoo Seok, “Enhancement of the Efficiency of the Dye Sensitized Solar Cell using Nanoparticles”, ARK-LSAMP Research Conference, Little Rock, AR, Apr. 20, 2012
19. *Ilwoo Seok, “Micro and Nanofabrication for Bio-Application”, 2012 Food safety conference in FDA/NCTR, Jefferson, AR, Apr. 11, 2012
20. Carson Munn, *Ilwoo Seok, "CZTS Based Thin Film Solar Cells Fabricated by All-Solution Processing and Pulsed Light Crystallization", Conference Create@STATE, Jonesboro, AR, Apr. 5, 2012
21. Kenneth Thompson, *Ilwoo Seok, ‘Fabrication of Nano-Scale Templates Using Anodized Aluminum Oxidation’, Conference Create@STATE, Jonesboro, AR, Apr. 5, 2012
22. *Ilwoo Seok, ‘Light Induced Microstructure Manufacturing and Improvement of Solar cell Efficiency’, US-Korea Conference on Science, Technology and Entrepreneurship (UKC), Park City, UT, August 10-14, 2011
23. *Ilwoo Seok, ‘Surface energy-driven nanostructure generation and its application to photovoltaics’, University of Idaho, Aug. 12, 2011
24. Timothy White, *Ilwoo Seok, “Improvement of Photovoltaic Performances using Nanomanufacturing”, 18th Arkansas Undergraduate Research Conference (AURC), Arkadelphia, AR, April 1-2, 2011
25. *I. W. Seok, “Improvement of Photovoltaics using Nanoparticles”, 20th Conference of the Korean-American Scientists and Engineers, Norwalk, CA, February 13, 2010
26. S. K. Kim, J. H. Park, K. H. Kim, *I. W. Seok, “Use of Nanoscale Plasmonics in Waveguides and Photovoltaics”, International Conference on NanoScience and NanoTechnology (GJ-NST), Korea, November 5-6, 2009
27. S. K. Kim, J. H. Park, I. W. Seok, D.H. Cha, Q. Pei, “Au nano-sized particle embedded plasmonic metal-slotted optical waveguide in polymer”, International Conference on NanoScience and NanoTechnology (GJ-NST), ND-363., Korea, November 6-7, 2008
28. K. W. Lee, I. W. Seok, G. J. Park, W. J. Song, Y. H. Lee, “Structural Optimization of a Rearview Mirror of a Passenger Car for Vibration Reduction”, VMA Engineering and Vanderplaats R&D User’s Conference, Nov. 1998

INTELLECTUAL PROPERTIES (1 US, 6 KOREA DOMESTICS)

- US Patent, “Compact Lens Module”, US7099093, 2006
- Korea Patent, “Ultrasonic motor for auto-focusing lens in mobile phone”, No.0014769 , 2004
- Korea Patent, “Ultra-small sized motors for mobile phone”, No.0014767, 2004
- Korea Patent, “Lens modules aimed to improve the stability during actuating”, No 0024225, 2004
- Korea Patent, “Supporting structures using piezo-material”, No.0018358, 2004
- Korea Patent, “Polygonal mirrors for scanning motors”, No.0039885, 2002
- Korea Patent, “Laser scanning motors using aerodynamic pressures”, No.0046779, 2002

HONOR/MASTER THESIS AND DOCTORAL DISSERTATION SUPERVISED

Doctoral Dissertation

- Sumon Roy (2019-present), ‘Researches for noble asphalt materials’, committee member (Advisor: Dr. Hossain)
- Maqsood Ali Mughal (2015), ‘A statistical approach for optimizing parameters for electrodeposition of indium (III) sulfide (In₂S₃) films, potential low-hazard buffer layers for photovoltaic applications’, committee member (Advisor: Dr. Engelken)

M.S. Engineering Thesis

- Etee Kawna Roy (2020), ‘Modeling the dynamics of charged nanoparticles in inverted dielectric systems for exploration of novel tunable materials’, committee member (Advisor: Dr. Kemp)
- MMTariq Morshed (2019), ‘Laboratory Evaluation of Nanoclay Modified Asphalt Binders’, committee member
- Tamal Sarkar (2019), ‘Anomalous behavior of like-charge particles and optical tunability of non-touching photonic surfaces’, committee member (Advisor: Dr. Hossain)
- Mohammad Waliullah (2018), ‘A study of light-matter interaction in nanopatterned arrays and biosensing applications’, supervised
- Aktaruzzaman Al-Hossain (2106), ‘Fabrication of nanopatterned arrays and optical applications’, supervised
- Md Saber Nazim (2018), ‘Plasmonic Resonance of Active Nanoparticle Dimer Systems in the Presence of Optical Binding Forces’, committee member
- Nandine Mitra (2017), ‘Analysis & Calculation of Electrostatic Force for Multiple Particles to demonstrate particles’ behavior towards equilibrium, committee member
- Misuk Saha (2017), ‘Analysis of Field and Force Calculation of Multiple Rayleigh Scattering, committee member
- Nayan K. Paul (2016), ‘Optical Pulling Force and Tractor Beams’, committee member

Bachelor Honor Thesis

- Benjamin Bush (2018), ‘Design of a PLC TRainer for Manufacturing Process’, supervised
- Lindsey George (2017), ‘Engineering DNA Isothermal Amplification Technology for Food Fish Species Identification’, committee member
- Hunter Brock (2017), ‘Fabrication of Microstructures and the Study of Optical Light Interaction’, supervised
- Jed Shales (2015), ‘Simulation of Particle Arrays for Optical Bandgap Control’, committee member
- Cecilia Clark (2015) ‘Research and development of improved football helmets to aid concussion studies’, committee member

HONORS/AFFILIATIONS

- | | |
|--|----------------|
| • Professional Engineers (PE) – Arkansas 16457 | 2013 - present |
| • Affiliated Professor in Environmental Sciences Program, A-State | 2012- present |
| • Chapter president (Arkansas); Korean-American Scientists and Engineers Association | 2017-2019 |
| • Advanced Research Development Institute (RDI) Fellowship; A-State | 2014 |
| • Faculty Research Award, A-State | 2013 |
| • Professional Development Award, A-State | 2013 |
| • Outstanding Student Scholarship; Hyanglim Foundation, Los Angeles, CA | 2008-2009 |
| • Graduate Student Scholarship; National Research Foundation of South Korea | 2005-2010 |