

Dr. Brandon A. Kemp, P. E.

Verbeth and Henry Ezra Coe Endowed Professor of Engineering
Professor of Electrical Engineering
Director of Engineering Graduate Programs
Arkansas State University
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EDUCATION

Massachusetts Institute of Technology, Cambridge, MA
Doctor of Philosophy, Electrical Engineering, June 2007
Thesis: *Optical Momentum Transfer to Macroscopic Media*
Areas of Study: Electrical Engineering, Physics, Applied Mathematics
University of Missouri-Rolla, Rolla, MO
Master of Science in Electrical Engineering, December 1998
Thesis: *Validation of an EMI Expert System*
Arkansas State University, Jonesboro, AR
Bachelor of Science in Engineering, Magna Cum Laude, May 1997

ACADEMIC EXPERIENCE

Arkansas State University
Professor of Electrical Engineering (2019-Present)
Director of Master of Science in Engineering Program (2012-Present)
Director of Engineering Graduate Programs (2019-2021)
Associate Professor of Electrical Engineering (2014 - 2019)
Interim Associate Dean of Engineering (2017 - 2018)
Assistant Professor of Electrical Engineering (2010 – 2014)

INDUSTRY EXPERIENCE

Lexmark International, Inc. Advisory Engineer, Laser Printer Technology (2007–2010): Knowledge Center team lead and laser printer technology development
MIT Lincoln Laboratory (June 2006 – December 2006, Lexington, MA): Radar Cross Section (RCS) modeling
BAE Systems, Information and Electronic Warfare Systems (Summer 2004, Nashua, NH) Detection and localization sensor systems.
Lexmark International, Inc. Controller Electronics (1999-2004): Electromagnetic compatibility and signal integrity design, evaluation and testing.

HONORS AND AWARDS

- Alumni Academy Charter Member, A-State Engineering and Computer Science (2021)
- Verbeth and Henry Ezra Coe Professorship of Engineering (2016)
- Arkansas Research Alliance Fellowship (2015)
- ASU Faculty Award for Scholarship (2013)
- NSF CAREER Award (2012).

- IEEE Senior Member (since 2012).
- American Institute of Physics Honorarium from Applied Physics Reviews (2011).
- Lexmark Research and Technology Symposium best oral presentation award (2009)
- Lexmark “Make it Happen Vision Award” (2001)
- Most Outstanding Graduate in Electrical Engineering, Arkansas State University (1997)
- Barry M. Goldwater Scholar (1995)

PROFESSIONAL MEMBERSHIPS AND CERTIFICATIONS

- Professional Engineer – Arkansas No. 17934; Kentucky No. 23495
- Arkansas Academy of Science Member
- Institute of Electrical and Electronics Engineers (IEEE) Senior Member
- International Society of Optics and Photonics (SPIE) Member
- Optical Society of America (OSA) Member
- American Society of Engineering Educators (ASEE) Member
- Member of the Honor Society of Phi Kappa Phi

PATENTS

1. Device for Determining and Adjusting Transfer Voltage in an Imaging Apparatus and a Method Thereof, US Patent 8,837,967 (September 16, 2014).
2. Transfer NIP for an Electrophotographic Device, and Methods of Making and Using Same, US Patent 8,588,667 (November 19, 2013).
3. Method for Enlarging Toner Transfer Window in EP Imaging Device and Transfer Station Employing the Method, US Patent 8,483,602 (July 9, 2013).
4. System for tailoring a transfer nip electric field for enhanced toner transfer in diverse environments, US Patent 8,126,342 (February 28, 2012).
5. Electrode-based post nip field conditioning method and apparatus, US Patent 7,965,953 (June 21, 2011).

EDITOR REVIEWED BOOK CHAPTERS AND ARTICLES

1. B. A. Kemp, “Nanophotonics: Momentum in metamaterials,” *Nature Photonics* **10**, 291-293 (2016). <http://doi:10.1038/nphoton.2016.81>
2. B. A. Kemp, “Macroscopic theory of optical momentum,” *Progress in Optics* Volume 60, Chapter 5, (2015). ISBN: 978-0-12-802284-9
<http://dx.doi.org/10.1016/bs.po.2015.02.005>

JOURNAL PUBLICATIONS

1. C. Jones, B. A. Kemp, C. J. Sheppard, "Enhanced radiation pressure reversal on free carriers in nanoparticles and polarization dependence in the Rayleigh regime," *Optical Engineering* 60(2), 027104 (2021). doi: 10.1117/1.OE.60.2.027104.
2. M. H. Rahaman, Tamal Sarkar, and B. A. Kemp, “Tunable and large plasmonic field enhancement in core-shell heterodimer/trimer,” *Journal of electromagnetic Waves and Applications*, DOI: 10.1080/09205071.2019.1683473 (2019).
3. N. Mitra, B. A. Kemp, T. Sarkar, and C. J. Sheppard, “Non-touching confinement of ternary particle systems by electrostatic surface forces,” *Journal of Applied Physics* 126, 075111 (2019).
4. M. H. Rahaman and B. A. Kemp, “Negative force on free carriers in positive index nanoparticles,” *APL Photonics* 2(10), 101301 (2017).
5. M. H. Rahaman and B. A. Kemp, “Analytical modeling of plasmonic resonance from multiple core-shell nanoparticles,” *Optical Engineering* 56(12), 121903 (2017).

6. B. A. Kemp and C. J. Sheppard, "Electromagnetic and material contributions to stress, energy, and momentum in metamaterials," *Advanced Electromagnetics* 6, 11-19 (2017).
7. M. H. Rahaman and B. A. Kemp, "Revisiting Mie's scattering theory for the analysis of the plasmonic resonance of metal nanospheres," *Journal of Electromagnetic Waves and Applications* 30, 2088 (2016). <http://dx.doi.org/10.1080/09205071.2016.1231089>.
8. N. K. Paul and B. A. Kemp, "Optical Manipulation of a Rayleigh Particle on the Surface of A Dielectric Medium," *Journal of Optics* 18, 085402 (2016).
9. C. J. Sheppard and B. A. Kemp, "Relativistic analysis of field-kinetic and canonical electromagnetic systems," *Physical Review A* 93, 053832 (2016).
10. B. A. Kemp, I. Nikolayev, and C. J. Sheppard, "Coupled electrostatic and material surface stresses yield anomalous particle interactions and deformation," *Journal of Applied Physics*. 119, 145105 (2016).
11. C. J. Sheppard and B. A. Kemp, "Kinetic energy-momentum tensor in electrodynamics," *Physical Review A*, 93, 013855 (2016).
12. N. K. Paul and B. A. Kemp, "Optical pulling force on a particle near the surface of a dielectric slab waveguide," *Optical Engineering* 55(1), 015106 (2016). doi:10.1117/1.OE.55.1.015106.
13. N. K. Paul and B. A. Kemp, "Push-pull phenomenon of a dielectric particle in a rectangular waveguide," *Progress in Electromagnetics Research (PIER)*, Vol. 151, 73-81 (2015).
14. C. J. Sheppard and B. A. Kemp, "Optical pressure deduced from energy relations within relativistic formulations of electrodynamics," *Physical Review A* 89, 013825 (2014).
15. B. A. Kemp and J. G. Whitney, "Nonlinear nature of micro-particle detachment by an applied static field," *Applied Physics Letters* 102, 141605 (2013).
16. B. A. Kemp and J. G. Whitney, "Electrostatic adhesion of multiple non-uniformly charged dielectric particles," *Journal of Applied Physics* 113, 044903 (2013).
17. J. G. Whitney and B. A. Kemp, "Deformation and non-uniform charging of toner particles: Coupling of electrostatic and dispersive adhesion forces," *Journal of Imaging Science and Technology* 57, 50505 (2013).
18. J. G. Whitney and B. A. Kemp, "Powder adhesion measurement using metered air pulse," *Journal of Imaging Science and Technology* 57, 50504 (2013).
19. B. A. Kemp, "Comment on Revisiting the Balazs thought experiment in the presence of loss: electromagnetic-pulse-induced displacement of a positive-index slab having arbitrary complex permittivity and permeability," *Applied Physics A* 110, 517 (2013).
20. B. A. Kemp, "Resolution of the Abraham-Minkowski debate: Implications for the electromagnetic wave theory of light in matter," *Journal of Applied Physics* 109, 111101 (2011).
21. B. A. Kemp and T. M. Grzegorzczuk, "The observable pressure of light in dielectric fluids," *Optics Letters* 36, 493 (2011).
22. H. Chen, B. Zhang, B. A. Kemp, and B. I. Wu, "Optical force on a cylindrical cloak under arbitrary wave illumination," *Optics Letters* 35, 667 (2010).
23. H. Chen, B. Zhang, Y. Luo, B. A. Kemp, J. Zhang, and B. I. Wu, "Lorentz force and radiation pressure on a spherical cloak," *Physical Review A* 80, 011808 (2009).
24. B. A. Kemp, J. A. Kong, and T. M. Grzegorzczuk, "Reversal of wave momentum in isotropic left-handed media," *Physical Review A* 97, 053810 (2007).
25. B. A. Kemp, T. M. Grzegorzczuk, B. I. Wu, and J. A. Kong, "Application of the electrostatic mean value theorem to electrostatic sensor electrodes," *Journal of Electrostatics* 65, 69 (2007).
26. B. A. Kemp, T. M. Grzegorzczuk, and J. A. Kong, "Optical momentum transfer to absorbing Mie particles," *Physical Review Letters* 97, 133902 (2006).

27. T. M. Grzegorzcyk, B. A. Kemp, and J. A. Kong, "Passive guiding and sorting of small particles with optical binding forces," *Optics Letters* 31, 3378 (2006).
28. T. M. Grzegorzcyk, B. A. Kemp, and J. A. Kong, "Stable optical trapping based on optical binding forces," *Physical Review Letters* 96, 113903, (2006).
29. T. M. Grzegorzcyk, B. A. Kemp, and J. A. Kong, "Trapping and binding of an arbitrary number of cylindrical particles in an in-plane electromagnetic field," *Journal of the Optical Society of America A* 23, 2324 (2006).
30. B. A. Kemp, T. M. Grzegorzcyk, and J. A. Kong, "Lorentz Force on Dielectric and Magnetic Particles," *Journal of Electromagnetic Waves and Applications* 20, 827 (2006).
31. B. A. Kemp, T. M. Grzegorzcyk, and J. A. Kong, "Ab initio study of the radiation pressure on dielectric and magnetic media," *Optics Express* 13, 9280-9291 (2005).
32. C. Barber, R. Engelken, W. Aleem, B. A. Kemp, I. Khan, C. Edrington, M. Buck, and T. Jakobs, "Preparation of Powder Precursors for and Evaporation of Photoconductive Indium (III) Sulfide Films", *Journal of the Arkansas Academy of Science* 51, 18 - 25 (1997).
33. A. Raza, R. Engelken, B. A. Kemp, I. Khan, W. Aleem, and C. Barber, "Electrodeposition of Copper Indium Sulfide Films from Organic Solutions", *Journal of the Arkansas Academy of Science* 50, 99-104 (1996).
34. B. A. Kemp, R. Engelken, A. Raza, W. Aleem, I. Khan, and C. Barber, "Improved Methods for Electroplating Cadmium Sulfide Thin Films," *Journal of the Arkansas Academy of Science* 50, 79-83 (1996).
35. B. A. Kemp, R. Engelken, A. Raza, A. Siddiqui, and O. Mustafa, "Diagnostics of CdTe Electrodeposition by Rest Potential Voltammetry," *Journal of the Arkansas Academy of Science* 49, 87-93 (1995).
36. A. Raza, R. Engelken, B. A. Kemp, A. Siddiqui, and O. Mustafa, "Molten Salt Electrolytes for Electrodeposition of CdTe Films", *Journal of the Arkansas Academy of Science* 49, 143-48 (1995).
37. C. Poole, R. Engelken, B. A. Kemp, and J. Brannen, "Tetraethylene Glycol - Based Electrolytes for High Temperature Electrochemical Deposition of Compound Semiconductors", *Journal of the Arkansas Academy of Science* 48, 133-139 (1994).

PUBLICATIONS IN REVIEWED PROCEEDINGS

1. B. A. Kemp and C. J. Sheppard, "Modeling optical manipulation using the field-kinetic and canonical formulations of electrodynamics," *Proc. SPIE 11083* (2019).
2. T. Sarkar and B. A. Kemp, "Effects of external field control on non-uniformly distributed charged particle assembly," Proc. 2019 Annual Meeting of the Electrostatics Society of America (2019).
3. M. H. Rahaman, T. Sarkar, and B. A. Kemp, "Electric field enhancement in the plasma coated/core-shell nanoparticles," *IEEE SoutheastCon 2019*, Huntsville, AR, USA (2019), pp 1-8.
4. T. Sarkar, N. Mitra, and B. A. Kemp, "Nonlinear Electrostatic Behavior of Multiple Charged Particles in Electrostatically Inverted Systems," *IEEE SoutheastCon 2018*, St. Petersburg, FL, USA (2018), pp. 1-3. doi: 10.1109/SECON.2018.8479145
5. M. H. Rahaman and B. A. Kemp, "A study of plasmonic field enhancement in bimetallic and active core-shell nanoparticles/nanorods," *IEEE SoutheastCon 2017*, Concord, NC, USA (2017), pp. 1-6. doi: 10.1109/SECON.2017.7925344
6. M. H. Rahaman, M. S. Nazim and B. A. Kemp, "Radiation pressure on core-shell nanoparticles in Rayleigh regime," *IEEE SoutheastCon 2017*, Concord, NC, USA (2017), pp. 1-6. doi: 10.1109/SECON.2017.7925345

7. B. A. Kemp and C. J. Sheppard, "Field and Material Stresses Predict Observable Surface Forces in Optical and Electrostatic Manipulation," *Proc. SPIE* 9922, 99220T (2016).
8. B. A. Kemp and C. J. Sheppard, "Electromagnetic and material contributions to stress, energy, and momentum in metamaterials," *Proceedings of the 4th Annual Advanced Electromagnetics Symposium*, 214 (2016). ISSN 2491-2417.
9. B. A. Kemp and C. J. Sheppard, "Physics of electromagnetic and material stresses in optical manipulation," *Proc. SPIE* 9548, 95480L (2015).
10. B. A. Kemp, "Modeling the electrostatic component of toner adhesion and detachment," *IS&T NIP* 29 (2013).
11. B. A. Kemp, "The Kinetic Formulation of Electrodynamics and Implications for Optical Manipulation," in *Optics in the Life Sciences*, OSA Technical Digest (online) (Optical Society of America, 2013), paper JT2A.31.
12. B. A. Kemp, "The kinetic subsystem of light and its role in optical manipulation," *Proc. SPIE*, 8810, 88100J (2013).
13. B. A. Kemp, "Subsystem approach to the electrodynamics in dielectric fluids," *Proc. SPIE* 8458, 845803 (2012).
14. B. A. Kemp, "Semi-Analytical Model of Charge Image Formation in Electrophotography," *IS&T NIP* 28, 487 (2012).
15. B. A. Kemp and J. G. Whitney, "Analytical Modeling of Electrostatic Toner Adhesion," *Focal Presentation IS&T NIP* 27, 140 (2011).
16. J. G. Whitney and B. A. Kemp, "Toner Adhesion Measurement," *IS&T NIP* 26, 229 (2010).
17. B. A. Kemp, C. M. Bennett, and J. G. Whitney, "Efficient Estimation of Critical Transfer Belt Parameters from an Electrical Characterization Fixture," *IS&T NIP* 25, 261 (2009).
18. T. M. Grzegorzczuk and B. A. Kemp, "Transfer of Optical Momentum: Reconciliations of the Abraham and Minkowski Formulations," *Proc. SPIE* 7038, 70381S (2008).
19. A. J. Dumaninan, E. C. Burt, and B. A. Kemp, "A Component Model Approach for the RCS Validation of an Electrically Large Open-Ended Cylindrical Cavity," *IEEE Antennas & Propagation Society Symposium Proceedings*, pg. 2471 (2007).

NATIONAL/INTERNATIONAL CONFERENCE PRESENTATIONS (PRESENTER IN BOLD)

1. **B. A. Kemp** and C. J. Sheppard, "Modeling optical manipulation using the field-kinetic and canonical formulations of electrodynamics," *SPIE Optics and Photonics: Optical Trapping and Optical Micromanipulation XVI*, San Diego, CA, USA, August 2019.
2. **T. Sarkar** and B. A. Kemp, "Effects of external field control on non-uniformly distributed charged particle assembly," 2019 Annual Meeting of the Electrostatics Society of America, Rochester, NY, USA, June 2019.
3. M. H. Rahaman, **T. Sarkar**, and B. A. Kemp, "Electric field enhancement in the plasma coated/core-shell nanoparticles," *IEEE SoutheastCon 2019*, Huntsville, AL, USA, April 12, 2019.
4. **T. Sarkar**, N. Mitra, and B. A. Kemp, "Nonlinear Electrostatic Behavior Of Multiple Charged Particles In Electrostatically Inverted Systems," *IEEE SoutheastCon 2018*, St. Petersburg, FL, USA, 2018.
5. **M. H. Rahaman** and B. A. Kemp, "A study of plasmonic field enhancement in bimetallic and active core-shell nanoparticles/nanorods," *IEEE SoutheastCon 2017*, Concord, NC, USA, 2017.
6. M. H. Rahaman, **M. S. Nazim** and B. A. Kemp, "Radiation pressure on core-shell nanoparticles in Rayleigh regime," *IEEE SoutheastCon 2017*, Concord, NC, USA, 2017.

7. **B. A. Kemp**, “Modeling anomalous electromagnetic interactions with materials via theoretical advances in the energy momentum debate,” EMN Meeting on Smart and Multifunctional Materials 2017, Rome, Italy (June 2017).
8. **B. A. Kemp** and C. J. Sheppard, “Electromagnetic and material contributions to stress, energy, and momentum in metamaterials,” *Advanced Electromagnetics Symposium*, Malaga, Spain (July 2016).
9. **B. A. Kemp** and C. J. Sheppard, “Field and Material Stresses Predict Observable Surface Forces in Optical and Electrostatic Manipulation,” *SPIE Optical Trapping and Optical Micromanipulation XIII*, Invited Presentation, San Diego, CA (August 2016).
10. **C. J. Sheppard** and B. A. Kemp, “A Relativistic Treatment of the Kinetic and Canonical Electromagnetic Systems,” *Progress in Electromagnetics Research Symposium*, Invited Presentation, Shanghai, China (August 2016).
11. **B. A. Kemp** and C. J. Sheppard, “Physics of electromagnetic and material stresses in optical manipulation,” *SPIE Optical Trapping and Optical Micromanipulation XII*, Invited Presentation, San Diego, CA (August 2015).
12. **B. A. Kemp**, “The kinetic formulation of electrodynamics and implications for optical manipulation,” *Optics in Life Sciences Conference*, Waikoloa, HI (April 2013).
13. **B. A. Kemp**, “The kinetic subsystem of light and its role in optical manipulation,” *SPIE Optical Trapping and Optical Micromanipulation X*, Invited Presentation, San Diego, CA (August 2013).
14. **B. A. Kemp**, “Modeling the electrostatic component of toner adhesion and detachment,” *IS&T NIP 29*, Seattle, WA (October 2013).
15. **B. A. Kemp**, “Subsystem approach to the electrodynamics in dielectric fluids,” *SPIE Optical Trapping and Optical Micromanipulation IX 28*, Invited Presentation, San Diego, CA (2012).
16. **B. A. Kemp**, “Semi-Analytical Model of Charge Image Formation in Electrophotography,” *IS&T NIP 28*, Quebec, Canada (2012).
17. **B. A. Kemp** and J. G. Whitney, “Analytical Modeling of Electrostatic Toner Adhesion,” Focal Presentation *IS&T NIP 27*, Minneapolis, MN (2011).
18. **J. G. Whitney** and B. A. Kemp, “Toner Adhesion Measurement,” *IS&T NIP 26*, Austin, TX (2010).
19. **B. A. Kemp**, C. M. Bennett, and J. G. Whitney, “Efficient Estimation of Critical Transfer Belt Parameters from an Electrical Characterization Fixture,” *IS&T NIP 25*, Louisville, KY (2009).
20. **T. M. Grzegorzczuk** and B. A. Kemp, “Transfer of Optical Momentum: Reconciliations of the Abraham and Minkowski Formulations,” *Optical Trapping and Optical Micromanipulation*, San Diego, CA (2008).
21. **A. J. Dumaninan**, E. C. Burt, and B. A. Kemp, “A Component Model Approach for the RCS Validation of an Electrically Large Open-Ended Cylindrical Cavity,” 2007 IEEE Antennas & Propagation Society Symposium, Honolulu, HI.
22. **B. A. Kemp**, T. M. Grzegorzczuk, and J. A. Kong, “Comparison of methods for the calculation of radiation pressure on dielectric and magnetic particles,” PIERS-2006, Cambridge, MA.
23. **B. A. Kemp**, T. M. Grzegorzczuk, B. I. Wu, and J. A. Kong, “Three satellite geolocation from TDOA and FDOA measurements,” PIERS-2006, Cambridge, MA.
24. **B. A. Kemp**, T. M. Grzegorzczuk, and J. A. Kong, “Optimal sensor placement for the localization of an electrostatic source,” PIERS-2006, Cambridge, MA.
25. **T. M. Grzegorzczuk**, B. A. Kemp, and J. A. Kong, “Theory and modeling of optical forces within a collection of Mie scatterers,” PIERS-2006, Cambridge, MA.

REGIONAL CONFERENCE PAPERS AND PRESENTATIONS (PRESENTER IN BOLD):

1. **E. K. Roy**, “Dynamic Modeling of Multiparticle Electrostatic Self-assembly Toward Tunable Surfaces in Inverted Dielectric System,” Presented by Roy April 2021 at the 104th Meeting of the Arkansas Academy of Science (online). This presentation won First Place in the Graduate Engineering and Computer Science Presentation category.
2. **E. K. Roy** and B. A. Kemp, “Development of multiparticle dynamic simulator for electrostatic self-assembly,” Presented by Roy April 2020 at the Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR.
3. **C. Jones** and B. A. Kemp, “Tunable nanoparticle surfaces for advanced propulsion,” Presented by Jones April 2020 at the Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR. This presentation won First Place in the Graduate Engineering Oral Presentation category.
4. **T. Sarkar** and B. A. Kemp, “Electromagnetic tunability of charged particles in altered dielectric systems,” Presented (oral) by Sarkar April 2019 at the 103rd Meeting of the Arkansas Academy of Science, Conway, AR. This presentation won First Place in the Graduate Engineering Oral Presentation category.
5. **C. Jones** and B. A. Kemp, “Optical Momentum Reversal in Nanoparticle Surface Arrays,” Presented by Jones April 2019 at the Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR.
6. **T. Sarkar** and B. A. Kemp, “Electrostatic stability and optical tunability of charged particles in inverted systems : An approach towards novel tunable surfaces,” Presented by Sarkar April 2019 at the Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR.
7. **B. A Kemp** and C. J. Sheppard, “Applications of theoretical advances in the optical energy momentum debate: invisibility cloaks, tractor beams, and reversed radiation pressure,” Presented by Kemp April 2018 at the 102nd Meeting of the Arkansas Academy of Science, Jonesboro, AR.
8. **C. J. Sheppard** and B. A. Kemp, “The Electrodynamics of Kinetic, Canonical, and Hidden Systems Under Relativistic Motion,” Presented by Sheppard April 2018 at the 102nd Meeting of the Arkansas Academy of Science, Jonesboro, AR.
9. **T. Sarkar** and B. A. Kemp, “Anomalous electrostatic nature of charged particles: An approach towards stable equilibrium in inverted systems,” Presented (Poster) by Sarkar April 2018 at the 102nd Meeting of the Arkansas Academy of Science, Jonesboro, AR. This presentation won First Place in the Graduate Engineering Poster Presentation category.
10. **Md. S. Nazim** and B. A. Kemp, “Rayleigh Scattering in Multiple Nanoparticle Systems: A Study of the Scattered Magnetic Fields,” Presented (Poster) by Nazim April 2018 at the 102nd Meeting of the Arkansas Academy of Science, Jonesboro, AR.
11. **Md. S. Nazim** and B. A. Kemp, “Particle Motion Simulator in 3-D: A MATLAB Program,” Presented by Nazim April 2018 at the eighth annual Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR.
12. **Md. S. Nazim** and B. A. Kemp, “Scattered Magnetic Field in Multiple Rayleigh Particles Systems,” Presented by Nazim April 2018 at the eighth annual Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR.
13. **M. H. Rahaman** and B. A. Kemp (faculty advisor), “Negative Force on Free Carriers and Charges in Metal Particles,” Presented by Rahaman April 2017 at the seventh annual Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR. This presentation won First Place in the Graduate Agriculture, Engineering, and Technology Oral Presentation Category.

14. **M. H. Rahaman** and B. A. Kemp (faculty advisor), "Field Enhancement in Plasmonically Active Multiple Core-Shell Nanoparticles/Nanorods," Presented by Rahaman April 2017 at the seventh annual Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR.
15. **S. Sanjari** and B. A. Kemp (faculty advisor), "Development of Standalone Image Analysis Toolboxes for Analyzing the Structural Properties of Fibrous Scaffolds," Presented by Sanjari April 2017 at the seventh annual Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR.
16. **M. Saha** and B. A. Kemp (faculty advisor), "Analytical Modeling of Electric Field Pattern of Dielectric Material Using Rayleigh Scattering and Mie Theory," Presented by Saha April 2017 at the seventh annual Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR.
17. **M. H. Rahaman** and B. A. Kemp, "Radiation pressure on core-shell nanoparticles," Presented (Poster) by Rahaman April 2017 at the 101th Meeting of the Arkansas Academy of Science, Conway, AR.
18. **S. Sanjari** and B. A. Kemp, "Image Analysis Toolboxes for Finding the Mean Pore Size of Scaffolds and Diameter Distribution of Fibers," Presented (Poster) by Sanjari April 2017 at the 101th Meeting of the Arkansas Academy of Science, Conway, AR.
19. **M. Saha** and B. A. Kemp, "Analytical modeling of microscopic and macroscopic analysis of dielectric material," Presented (Poster) by Saha April 2017 at the 101th Meeting of the Arkansas Academy of Science, Conway, AR.
20. **C. J. Sheppard** and B. A. Kemp, "A Relativistic Approach to Kinetic and Canonical Electromagnetic Systems," Presented (oral) by Sheppard April 1, 2016 at the 100th Meeting of the Arkansas Academy of Science, Fayetteville, AR.
21. **N. K. Paul** and B. A. Kemp, "Optical tractor beam and manipulation of small particles on dielectric surface," Presented (poster) by Paul April 2, 2016 at the 100th Meeting of the Arkansas Academy of Science, Fayetteville, AR.
22. **M. H. Rahaman** and B. A. Kemp, "Study of Lorentz force on a metallic Mie particles," Presented (poster) by Rahaman April 2, 2016 at the 100th Meeting of the Arkansas Academy of Science, Fayetteville, AR.
23. **N. K. Paul** and B. A. Kemp (faculty advisor), "Manipulation of Small Particles on the Surface of a Material," Presented by Paul April 2016 at the sixth annual Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR. This presentation won First Place in Graduate STEM Oral Presentation Category.
24. **S. Sanjari** and B. A. Kemp (faculty advisor), "Development of an Image Analysis Toolbox for Biological Imaging," Presented by Sanjari April 2016 at the sixth annual Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR. This presentation won First Place in Graduate STEM Poster Presentation Category.
25. **N. K. Paul** and B. A. Kemp (faculty advisor), "Optical Tractor Beam on a Chip," Presented by Paul April 2016 at the sixth annual Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR.
26. **M. H. Rahaman** and B. A. Kemp (faculty advisor), "Revisiting Mie's scattering theory for the analysis of the plasmonic resonance of metal nanosphere," Presented by Rahaman April 2016 at the sixth annual Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR.
27. **C. J. Sheppard** and B. A. Kemp, "The kinetic of subsystem of light: A Lagrangian approach," Presented by Sheppard April 2015 at the fifth annual Create @STATE: A Symposium of Research, Scholarship & Creativity, Jonesboro, AR.
28. **C. J. Sheppard** and B. A. Kemp, "Balazs' Thought Experiment Revisited: The Relativistic Electromagnetic Approach," Presented by Sheppard April 2015 at the fifth

TEACHING EXPERIENCE

ENGR 1402 Concepts of Engineering
ENGR 2423 Electric Circuits I
EE 3312 Electric Circuits II
EE 3343 Engineering Fields and Waves
EE 3353 Continuous and Analog Systems
EE 3393 Probability and Random Signals
EE 4303 Electromagnetic Waves
EE 4353 Power Systems
EE 479V Internship
ME 469V Physics for Engineers
ENGR 6023 Advanced Engineering Math
ENGR 6043 Applied Probability and Estimation
ENGR 6133 Engineering Electrodynamics