

Dr. Robert A. (Drew) Fleming
Associate Professor of Mechanical Engineering
College of Engineering and Computer Science
Arkansas State University

Education:

University of Arkansas	Mechanical Engineering	Ph.D., 2017
University of Arkansas	Mechanical Engineering	MSME, 2012
University of Arkansas	Mechanical Engineering	BSME, 2009

Appointments:

07/25 – Present	Associate Professor of Mechanical Engineering, Arkansas State University
08/19 – 06/25	Assistant Professor of Mechanical Engineering, Arkansas State University
01/15 – 07/19	Senior Research Engineer, WattGlass, Fayetteville, AR
06/10 – 12/16	Graduate Researcher in the Nanomechanics and Tribology Laboratory, Institute for Nanoscience and Engineering, University of Arkansas
08/09 – 12/09	Heat Transfer Laboratory Instructor (Teaching Assistantship), Department of Mechanical Science and Engineering, University of Illinois – Urbana-Champaign

Selected Publications: [21 journal articles, 73 conference presentations, 1 patent issued, 6 invited seminars]

1. Ahmed, N., Hossain, M.A., Rogers, L., **Fleming, R.A.**, and Ghosh, S. (2026), “Enhanced Durability of Chromium-Primed MoS₂ Coatings on Aluminum for Aerospace Flap Rail Slider Pads,” *ASME Journal of Tribology*, 148(7): 071402, DOI:10.1115/1.4070990
2. Nalam, P.C., Fleming, R.A., Jackson, R.L., Faga, M.G., Ghaednia, H. (2026), “Editorial: Orthopedics and Biotribology Special Issue,” *ASME Journal of Tribology*, DOI:10.1115/1.4071155
3. Zou, M., Afshar-Mohajer, M., and **Fleming, R.A.** (2025), “Tribology of Textured Surfaces,” *Lubricants*, 13(8), 339, DOI:10.3390/lubricants13080339
4. Islam, M.A., Rashid, S., Hossain, N., **Fleming, R.A.**, and Sokolov, A. (2023), “An integrated convolutional neural network and sorting algorithm for image classification for efficient flood disaster management,” *Decision Analytics Journal*, 7, 100225, DOI:10.1016/j.dajour.2023.100225
5. Phelan, C., Miller, C., **Fleming, R.A.**, Goss, J.A., Rincon, C., Wei, R., and Zou, M. (2022), “Test Parameter and Material Dependence of the Frictional Properties of Core-Shell Nanostructure Textured Surfaces,” *Tribology International*, 171, 107567, DOI:10.1016/j.triboint.2022.107567
6. Moffitt, S.L., Riley, C., Ellis, B.H., **Fleming, R.A.**, Thompson, C.S., Burton, P.D., Gordon, M.E., Zakutayev, A., and Schelhas, L.T. (2020), “Combined Spatially Resolved Characterization of Antireflection and Antisoiling Coatings for PV Module Glass,” *ACS Combinatorial Science*, 22, 4, 197-203, DOI:10.1021/acscombsci.9b00213
7. Moffitt, S.L., **Fleming, R.A.**, Thompson, C.S., Titus, C.J., Kim, E., Leu, L., Toney, M.F., and Schelhas, L.T. (2019), “Advanced X-ray Scattering and Spectroscopy Characterization of an Anti-Soiling Coating for Solar Module Glass,” *ACS Applied Energy Materials*, 2, 11, 7870-7878, DOI:10.1021/acsaem.9b01316
8. **Fleming, R.A.** and Zou, M. (2018), “Nanostructure-Textured Surfaces with Low Friction and High Deformation Resistance,” *Tribology Transactions*, 61(1), 80-87, DOI:10.1080/10402004.2016.1274066 (Edmond E. Bisson Award from STLE for best paper published in 2018.)
9. Choudhury, D., Ranuša, M., **Fleming, R.A.**, Vrbka, M., Křupka, I., Teeter, M.G., Goss, J., and Zou, M. (2018), “Mechanical wear and oxidative degradation analysis of retrieved ultra high

molecular weight polyethylene acetabular cups,” *Journal of Mechanical Behavior of Biomedical Materials*, 79, 314-323, DOI:10.1016/j.jmbbm.2018.01.003

Awards:

- A-State CoECS Outstanding Teaching Award (Tenure-Track), 2023
- Ralph E. Powe Junior Faculty Enhancement Award from ORAU, 2021
- Edmond E. Bisson Award from STLE, 2019
- NSF Graduate Research Fellowship, 2011-2016
- Gold Poster Award at STLE Annual Meeting, 2016
- Silver Poster Award at STLE Tribology Frontiers Conference, 2016
- 2nd Place Poster Award at 76th Physical Electronics Conference, 2016
- NSF CMMI Engineering Research and Innovation Student Conference Fellowship, 2012
- NSF Summer Institute Short Course on Cancer Nanotechnology Fellowship, 2011
- Named to UIUC’s “List of Teachers Ranked as Excellent by their Students”, 2009

Professional Capabilities:

- Extensive experience in surface engineering and surface characterization related to antireflective coatings, polymers, surface wetting, soiling, surface chemical analysis, experimental nanomechanics, nanotribology, electron beam lithography, nanofabrication, etc.
- 7+ years of experience in developing, characterizing, and commercializing high-performance antireflective coatings for solar photovoltaic and industrial lighting applications
- Expertise in computational materials science simulation using high-performance computing resources:
 - *razor*, *trestles*, and *pinnacle* at the Arkansas High-Performance Computing Center (AHPCC)
 - *pete* at the Oklahoma State University High Performance Computing Center
 - *grace* at the University of Arkansas for Medical Sciences
 - *stampede* at the Texas Advanced Computing Center (TACC)

Professional Service:

- Associate Editor, ASME Journal of Tribology, 2024-Present
- Treasurer, Arkansas Academy of Science, 2024-Present
- Reviewer for the ASME Journal of Tribology, Tribology Letters, Thin Solid Films, Journal of Materials Research, Wear, Applied Physics Letters, IEEE Journal of Photovoltaics, Solar Energy Materials & Solar Cells, Cold Regions Science and Technology, and Journal of Adhesion Science & Technology
- Proposal Reviewer for the DOE Technology Commercialization Fund, SETO SBIR/STTR Program, DOE Basic Energy Sciences Early Career Award Program, DOE OCED ERA Program, NSF MRI Program, and NSF EPSCoR Fellows Program
- Application Reviewer for the ADHE SURF Program and NSF Fellowship Programs
- Team coach for 2023 National AI Campus: Computational Materials Science with JARVIS
- Commercialization mentor for 2024 NSF I-Corps Site Program: University of Arkansas
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- ASME Tribology Division Executive Committee member, 2023-Present
- ASME Tribology Division Education Committee member, 2012-2016
- Mentored 26 undergraduate students through NSF REUs and other undergraduate research programs