

JOSEPH SHAW

Director of the Optical Technology Center, Distinguished Professor of Electrical Engineering, Affiliate Professor of Physics: Montana State University

Education

Ph.D and M.S. in Optical Sciences, The University of Arizona
M.S. in Electrical Engineering, The University of Utah
B.S. in Electrical Engineering, The University of Alaska Fairbanks

Technical Activities/Interests

- Optical remote sensing system development and application to environmental and ecological sciences, biology, entomology, agriculture, and defense sensing.
- Photography and science of natural optical phenomena

Services to the Technical Community

- Founding Board Member – Montana Photonics Industry Alliance (2013–2021).
- Education & Training in Optics & Photonics (ETOP): Committee (2020–2023), Co- Chair (2019).
- Plenary Speaker, Sensing and Sensors Congress (Optica, 2022).
- Andrew Gemant Award Selection Committee (Am. Physical Society, 2008–2010).
- Adolph Lomb Medal Committee (OSA): Chair 2002, member 2001.
- Co-Editor, Applied Optics feature issues on Polarization Sensing (2006) and light & color in the open air (2008, 2011, 2015, 2017).
- Organizing Committee, International Laser Radar Conference (2008–2023).
- Co-Chair & Committee, Int'l Light & Color in Nature Conference (2004–2023).
- Editorial Advisory Committee, Optics & Photonics News (OSA, 2004–2008).
- Membership & Educational Services Council (OSA, 2007–2008).
- Faculty advisor, SPIE & Optica student chapters (2006–2023).

Service to SPIE

- Board of Directors (2021–2023).
- Nominating Committee (2021).
- Future Sensing Technologies Conference: co-chair (2020–2023).
- Education Committee (2020).
- Awards Committee: chair (2014–2015), member (2004–2013).
- Fellows Selection Committee (2011–2013).
- Co-Chair, Polarization Remote sensing (2003–2023); Light in Nature (2010–2023).
- Co-Editor, Optical Engineering feature issue on polarization (2018–2019).
- Associate Editor, Journal of Applied Remote Sensing (2012–2017).
- Organizing Committee, Polarization Measurements... (2000–2023)
- Organizing Committee for 6 other remote sensing conferences (1997–2023).
- Short Course Instructor (LiDAR, remote sensing systems, radiometry 2001–2023).
- Author, Optics in the Air (2017).

Professional Honors

- Fellow of SPIE (2008) and Optica (2004).
- G. G. Stokes Award–SPIE (2019).
- Award of Excellence–University Economic Development Association (2015).
- Faculty Mentoring, Graduate Student Mentoring, Technology Transfer, Meritorious Research, Creative Scholarship & Teaching Awards–Montana State University.
- Best Paper Award–SPIE Journal of Applied Remote Sensing (2022).
- Professor Vilho Vaisala Award–World Meteorological Organization (2000).
- Presidential Early Career Award for Scientists and Engineers (1998).

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Election Statement

Optics enables and explains much of our world, yet it is often not even recognized as a field by young people who are making career decisions. I want to help address this through my service on the SPIE Board of Directors by helping to design and implement programs, policies, and activities that inform and attract a more diverse population to our field. As a community of professionals working to improve the world through light-based technology and science, SPIE is the right professional society to lead this growth. Ironically, we have an “image problem” – either through a lack of awareness of the field or as a bad perception by young people. For example, when my daughter was in middle school, her friends responded “ooh, yuck!” when they were told I was an engineering professor; however, they became excited and curious when I explained that what I REALLY do is develop tools like airborne laser systems for mapping invasive lake trout in nearby Yellowstone National Park. As a global Society, we have a great opportunity to increase interest and activity in optics and photonics by communicating the excitement and positive impact of our field in ways that relate to the things that matter most to each person.

I also am excited to help SPIE even better serve our members around the world. For the past 20 years, I have directed a multidisciplinary center at Montana State University in a rural area, far from the more-populous regions where you typically find high-tech companies. This center exists to promote optics and photonics education and research with a primary objective of creating local economic development.

Through industry-academia partnerships and a purposefully designed entrepreneurial community, we have helped create more than 30 optics and photonics companies in our small town. This daily contact with industry and government leaders has taught me valuable lessons about how to grow the optics and photonics community and design academic programs to serve societal needs. To enable and support our industry, we have created optics and photonics education programs ranging from a 2-year degree for technician training to specialized Ph.D. research, all guided by industry and government input.

I recognize that I can only help SPIE serve the professional needs of its diverse membership by listening carefully to your many voices and perspectives. I will support policies and decisions that continue to promote excellence and improve diversity in membership, leadership, and professional recognition.

While serving on the SPIE Board of Directors through the COVID-19 pandemic, I have been deeply impressed with the wise decisions that can be made in the face of enormous uncertainty when we listen to all voices carefully and focus on people and relationships. With your support, I will be honored to continue my service as an ambassador for the Society and for our optics and photonics community.