DANIEL M. WOLFE, Ph.D., ACTAR
PROFESSIONAL BIOGRAPHICAL OUTLINE

BACKGROUND

Dr. Wolfe is a forensic scientist and accident reconstructionist specializing in the reconstruction of motor vehicle, pedestrian, and bicycle collisions. He is accredited as a Traffic Accident Reconstructionist by the Accreditation Committee for Traffic Accident Reconstruction (ACTAR #3532). He has training and experience in the field of human factors as it applies to accident reconstruction, including driver perception-response times and Interactive Driver Response Research (IDRR) software. Dr. Wolfe specializes in collisions involving nighttime recognition and conspicuity issues, including headlight mapping of vehicles, illumination from roadway lighting, and nighttime photography. He is trained in photogrammetry to determine vehicle crush and map scene evidence from photographs. He is also experienced in constructing scene diagrams and drawings utilizing computer aided design software, is certified as a BOSCH Crash Data Retrieval (CDR) technician, and is experienced in documenting evidence utilizing three-dimensional laser scanning. Dr. Wolfe relies on his educational background in electrical engineering and physics to understand the operation and functionality of vehicle sensors such as, light detection and ranging (LiDAR), millimeter wave, infrared, and optical cameras.

Dr. Wolfe earned a Ph.D. in Electrical and Computer Engineering at the University of Delaware, Newark, Delaware, and a B.S. in Engineering with a minor in Mathematics at James Madison University, Harrisonburg, Virginia. As a doctoral candidate, Dr. Wolfe studied electromagnetics, optics, and photonics including nanoelectronic devices, opto-electronics, electronic material processing, and integrated optics. Dr. Wolfe's dissertation titled "Low Cost Controllable Optofluidic Smart Glass for Energy Efficiency, Thermal Management, and Privacy Applications" investigated a low-cost alternative to commercially available electrically activated switchable glass technologies. By exploiting the physical phenomena of total internal reflection and geometric optics, Dr. Wolfe optically modeled and fabricated a multi-layer prism design capable of achieving high reflectance at wide angles of incidence. By introducing an optically tunable fluid, the device was able to modulate the transmission of electromagnetic energy. Dr. Wolfe's low-cost novel optofluidic smart glass technology is currently patent pending.

In addition, Dr. Wolfe consults with the National Hockey League on issues of player safety. Dr. Wolfe's research interests include: autonomous vehicles, vehicle sensing systems, headlight technology, and photogrammetry.

AREAS OF SPECIALTY

- Accident Reconstruction
- EDR (Black Box) Imaging & Analysis
- Pedestrian/Bicycle Accident Analysis
- Vehicle Sensors
- Human Factors
- Nighttime Visibility / Conspicuity
- Scene Diagramming
- 3D Laser Scanning
- Photogrammetry
- 3D Visuals & Animations

EDUCATION

- Doctor of Philosophy in Electrical and Computer Engineering, University of Delaware, 2017
- Bachelor of Science in Engineering, James Madison University, 2012

PROFESSIONAL EXPERIENCE

May 2017 – Present | ARCCA, Incorporated | Forensic Scientist & Accident Reconstructionist

- Investigates and reconstructs motor vehicle collisions
- Utilizes photogrammetry to determine information and measurements from vehicle and scene photographs
- Conducts nighttime visibility and conspicuity studies, including headlight mapping and documentation of scene illumination
- Applies human factors to crash reconstruction and utilizes Interactive Driver Response Research (IDRR) software
- Images Event Data Recorders in passenger vehicles
- Documents and analyzes evidence utilizing 3D laser scanning hardware and software
- Creates 3D animations, visuals and scene diagrams from accident reconstruction analyses
- Assesses occupant motion and vehicle dynamics in response to applied crash forces
- Utilizes reconstruction software such as EDCRASH, EDSMAC, SCENE, and Reality
- Studies pedestrian and bicyclist interactions with passenger and commercial vehicles

2012 – May 2017 | University of Delaware | Research Assistant

- Conducted research on smart glass devices for building energy efficiency, dynamic camouflage, and window privacy applications
- Designed, modeled, fabricated, and tested fluidic based switchable glass prototypes
- Developed an optimized, low-cost optofluidic smart glass device capable of achieving high transmittance modulation

2012 – 2016 | University of Delaware, Industrial Assessment Center | Energy Engineer

- Conducted 43 energy assessments at local manufacturing plants, serving as the lead analyst for 15 assessments with recommended energy savings totaling $9.8 million
- Conducted 30 energy assessments at non-profit facilities, serving as the lead analyst for 11 assessments

2009 – 2011 | 2rw Consultants, Inc., Charlottesville, VA | Energy and Design Engineer

- Contributed to the design of mechanical and electrical systems for government facilities using AutoCAD
- Redesigned Basis for Analysis (BFA's) data sheets, creating a new company standard for building analysis
- Conducted energy audits at Pine Bluff Arsenal, United States Coast Guard Bases: Station Juneau, Ketchikan, Sitka, and Keesler and Barksdale Air Force Bases
- Collaborated with senior project engineers on developing building baselines and implementation of Energy Conservation Measures (ECM's) into building models using TRANE Trace 700

TRAINING

- Advanced Crash Reconstruction Utilizing Human Factors, Northwestern University
- Traffic Crash Reconstruction I, Northwestern University
- Advanced Photogrammetry for Collision Reconstruction, Lightpoint Scientific
- FARO Laser Scanner Training, FARO
- BOSCH CDR Technician Training, Institute of Police Technology and Management

PROFESSIONAL AFFILIATIONS

- Society of Automotive Engineers (SAE)
- National Association of Professional Accident Reconstruction Specialists (NAPARS)

PUBLICATIONS

Wolfe, D., Goossen, K., "Optofluidic smart glass with wide angular performance," Proc. SPIE 10601, Smart Materials and Nondestructive Evaluation for Energy Systems IV, 1060102 (27 March 2018).

Wolfe, D., Goossen, K., "Evaluation of 3D Printed Optofluidic Smart Glass Prototypes," Optics Express 26, A85-A98 (2018).

Wolfe, D., Goossen, K., "Cycling and Performance Data of 3D Printed Optofluidic Smart Glass," in Advanced Photonics 2017 (IPR, NOMA, Sensors, Networks, SPPCom, PS), OSA Technical Digest (online) (Optical Society of America, 2017), paper NoW1C.3.

Wolfe, D., Goossen, K., "Low Cost Optofluidic Smart Glass," in *Advanced Photonics 2016 (IPR, NOMA, Sensors, Networks, SPPCom, SOF)*, OSA Technical Digest (online) (Optical Society of America, 2016), paper JW4A.3.

Wolfe, D., Goossen, K., "Initial Study on Controllable Reflectance Roofing System to Tailor Building Solar Loads for Increased HVAC Efficiency," *ASME Journal of Solar Energy Engineering*, 2015 ASME; 137(4):044503-044503-3. doi:10.1115/1.4030402.

Goossen, K., **Wolfe, D.**, Schubert, F., Kilper, D., and Keller, U., "Negawatts: Optics, Photonics, and Energy Savings," *Optics and Photonics News*, 2014 OSA; 25 (11), pp. 34-41. doi:10.1364/OPN.25.11.000034.

Wolfe, D., Goossen, K., "Optimized Optical Structures for Active Modulated Reflectance Roofing System," *43rd ASES National Solar Conference 2014*, 2014 American Solar Energy Society; 1, ISBN: 978-1-5108 0179-0.

Wolfe, D., Goossen, K., "Active Modulated Reflectance Roofing System to Tailor Building Solar Loads for Increased HVAC Efficiency," *ASME 2014 8th International Conference on Energy and Sustainability*, 2014 ASME; 2. doi:10.1115/ES2014-6386.

Striebig, B., Ogundipe, A., Amini, A., Anderson, D. Haling, L., Morrison, B., Sanmiguel, V., Smith, E., and **Wolfe, D.**, "An Interactive Sustainable Infrastructure Design Model for Health Clinics in Sub-Saharan Africa," *Global Humanitarian Conference (GHTC)*, 2012 IEEE; pp. 247, 252, 21-24.