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

BACKGROUND

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. During his doctoral candidacy, Dr. Wolfe researched and studied in the fields of physics, electromagnetics, optics, photonics and lighting. Dr. Wolfe's studies included applications such as nanoelectronic devices, opto-electronics, electronic material processing, and integrated optics. His dissertation involved the development of a novel optofluidic smart glass, 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 light reflectance at wide angles of incidence. By introducing an optically tunable fluid, the device was able to modulate the transmission of light and electromagnetic energy.

Dr. Wolfe is a Senior Forensic Scientist specializing in the fields of lighting, human factors, and accident reconstruction. Dr. Wolfe investigates and reconstructs passenger vehicle, commercial vehicle, pedestrian, and bicycle collisions. He is accredited as a Traffic Accident Reconstructionist by the Accreditation Commission for Traffic Accident Reconstruction (ACTAR #3532). He has training and experience in the field of human factors, including driver perception-response times and Interactive Driver Response Research (IDRR) software. In addition to specializing in collisions involving nighttime recognition and conspicuity issues, Dr. Wolfe also performs lighting analyses in slip, trip, fall incidents and matters involving perception and object detection. Dr. Wolfe's analysis techniques include headlight mapping of vehicles, luminance and illuminance mapping of artificial lighting, scene luminance, visibility modeling, and low-illumination 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 analyst, certified by the Society of Automotive Engineers (SAE) to access and interpret Heavy Vehicle Event Data Recorders (HVEDR) in commercial vehicles, and is experienced in documenting evidence utilizing three-dimensional laser scanning. Dr. Wolfe relies on his educational background in electrical engineering and physics to design, test, and analyze automotive electrical systems. He also evaluates and tests various Advanced Driver Assistance Systems (ADAS) that utilize technologies such as light detection and ranging (LiDAR), millimeter wave radars, infrared, and optical cameras.

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
- Human Factors
- EDR (Black Box) Imaging & Analysis
- Commercial vehicle HVEDR Imaging & Analysis
- Pedestrian/Bicycle Accident Analysis
- Vehicle Sensors and Electronics
- Nighttime Visibility / Conspicuity
- Low-Illumination Photography
- Lighting
- Photogrammetry
- Analysis of vehicle electrical systems
- Advanced Driver Assistance Systems (ADAS)

EDUCATION

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

PROFESSIONAL EXPERIENCE

May 2017 – Present | ARCCA, Incorporated | Senior Forensic Scientist

- 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 and luminance
- Applies human factors to crash reconstruction and utilizes Interactive Driver Response Research (IDRR) software
- Images Event Data Recorders in passenger vehicles and Heavy Vehicle Event Data Recorders (HVEDR) in commercial 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

PROFESSIONAL AFFILIATIONS

- Society of Automotive Engineers (SAE)
- Optical Society of America (OSA)
- Illuminating Engineering Society (IES)
- National Association of Professional Accident Reconstruction Specialists (NAPARS)

TRAINING

- Accessing and Interpreting Heavy Vehicle Event Data Recorders (HVEDR), Society of Automotive Engineers
- Heavy Vehicle Forensic Mechanical Inspection for Collision Investigators, Northwestern University
- Event Data Recorder Use in Traffic Crash Reconstruction for Engineers, Ruth Consulting
- Texas Association of Accident Reconstruction Specialists (TAARS)
    - Night Time Accidents - Applied Human Factors Concepts for Accident Reconstruction
- National Association of Professional Accident Reconstruction Specialists (NAPARS)
    - Motorcycle Turning
    - Investigating Rollover Crashes
    - GoPro GPS Data Analysis
    - Perception Reaction Times in Different Crash Types
    - Obtaining Chip-level Data from Modules
    - Considering Tires in Your Investigation
- 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

PUBLICATIONS

Teitelman, J., Rodos, E., **Wolfe**, D., Helker, M., (2021) "Toyota Vehicle Control History: 'Sudden Braking History' Recording Characteristics," Collision: The International Compendium for Crash Research. (Fall, 2021 Issue)

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.