

# Jason S. Kiddy, Ph.D.

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## **ACADEMIC BACKGROUND**

*Doctor of Philosophy* in Aerospace Engineering, University of Maryland, College Park, August 1999

*Master of Science* in Mechanical Engineering, University of Maryland, College Park, May 1997

*Bachelor of Science* in Mechanical Engineering, University of Maryland, College Park, May 1995

*Bachelor of Science* in Physics, Frostburg State University, May 1994

## **AREAS OF EXPERTISE**

Mechanical Systems Design and Analysis	Codes and Standards	Failure Analysis	Warnings and Instructions
Product Liability	Quality Control Systems	Plumbing Systems	Intellectual Property
Product Qualification	Shock and Vibrations	High Pressure Systems	Laboratory Testing
Manufacturing Processes	Thermal Testing	Electro-Optics and Optical Sensing	Transducer and Sensor Design

## **PROFESSIONAL EXPERIENCE**

### **Beacon Scientific**

#### **Principal Engineer**

2016 – Present Responsible for leading and supporting litigation and intellectual property matters as an expert in the fields of mechanical/aerospace engineering and physics. Has overall responsibility for the day-to-day operation of the company including facilities, finances, human resources, business development, legal, and administrative duties. Provides technical support and guidance to the engineering staff.

### **Weatherford (acquired Aither Engineering, Inc.)**

#### **Product Line Engineering Manager – Optical Sensing Systems**

2011 – 2017 Responsible for all engineering activities within optical sensing systems including new product development, engineering support for existing products and manufacturing, and long-range R&D. The product line consisted of downhole fiber optic pressure and temperature sensors, flowmeters, and seismic systems supported by ruggedized cabling and support hardware all designed to operate in extremely harsh conditions. Managed product line intellectual portfolio consisting of 300+ patents. Engineering group consisted of 15+ engineers and a budget of approximately \$6M per year.

## **Aither Engineering, Inc. (spin-off from SPA)**

### President

2006 – 2011 Responsible for all aspects of the company's operation including financial, technical, business development, administrative, human resources, and legal. Customers included government and private industries with a focus on fiber optics sensors for harsh environments, particularly for the Navy and the oil and gas industry.

## **Systems Planning and Analysis, Inc.**

### Director – Advanced Engineering Development Program

2002 – 2006 Responsible for the day-to-day management of the Advanced Engineering Development Program including technical performance, business development, staffing and budgeting. Business primarily generated from SBIR (Small Business Innovation Research) projects in a wide range of technologies and application areas.

### Senior Research Engineer

1999 – 2002 Performed as a key technical team member responsible for project management and individual technical contributions in the fields of fiber optic sensing, structural health monitoring, vibrations and modal analysis, unmanned air vehicles and smart structures.

## **Alfred Gessow Rotorcraft Center, University of Maryland, College Park**

### Graduate/Rotorcraft Fellow

1996 – 1999 Graduate research into the feasibility of the detection of incipient damage in helicopter rotor blades using vibration analysis.

## **PATENTS**

Pressure Sensor Arrangement Using an Optical Fiber and Methodologies for Performing an Analysis of a Subterranean Formation

US 9,347,312 B2, US 10,246,989 B2, CA 2791241A1

Time Division Multiplexing (TDM) and Wavelength Division Multiplexing (WDM) Sensor Arrays

US 9,389,174 B2

Apparatus and Methods for Cemented Multi-Zone Completions

US 9,926,783, EPO 3019692B1, DK 3019692T3

Optical Fiber Coating to Reduce Friction and Static Charge

US 10,173,286

Pressure Sensor Arrangement Using an Optical Fiber and Methodologies for Performing an Analysis of a Subterranean Formation

US 10,246,989 B2, CA 2744734

Fiber Optic Cable for Inhibiting Breaching Fluid Flow (Pending)

US 15/864,205

## **CONTINUING EDUCATION SEMINARS:**

Personal Survival Techniques (2002) • H2S Alive (2010) • Transportation of Dangerous Goods (2010) • IADC RigPass (2012) • Certified Crossbow Instructor (2017) • Electrical Measurement Safety Program (2017) • Certified Aerial Work Platform Operator (2018) • Certified Rough Terrain Fork Lift Operator (2018) • Maryland Natural Resources Police Hunter Education Program (2018) • Using Warnings and Instructions to Increase Safety and Reduce Liability (2019)

## **SELECTED TECHNICAL PUBLICATIONS**

Baldwin, C.S., Kiddy, J.S., and Samuel, P.D., "Towards Development of a Fiber Optic-Based Transmission Monitoring System", in Photonic Applications for Aerospace, Transportation, and Harsh Environment II, Proceedings of SPIE Vol. 8026 (SPIE, Bellingham, WA 2011).

Coker, J.D., Pines, D.J., Kiddy, J.S., "Fiber Optic Strain Sensor Vibration Separation for Detection of Seeded Faults in Rotorcraft Transmissions," Proceedings of the ASME Conference on Smart Materials, Adaptive Structures and Intelligent Systems (Ellicott City, MD 2008).

Baldwin, C.S., Kiddy, J.S., et al., "Fiber Optic Sensors Monitoring Transmission Ring Gears", in Photonics in the Transportation Industry: Auto to Aerospace, Proceedings of SPIE Vol. 6758 (SPIE, Bellingham, WA 2007).

Kiddy, J.S., Baldwin, C.S., Salter, T.J., "Submarine Certification Test Using Fiber Optic Sensors," Sea Technology, Vol. 47 (12), December 2006.

Kiddy, J.S., Baldwin, C.S., Salter, T.J., "Hydrostatic Testing of a Manned Underwater Vehicle Using Fiber Optic Sensors," Proceedings of MTS/IEEE Oceans Conference and Exposition, Vol. 2, September 2005, pp. 1876-1881.

Kiddy, J.S., et al., "Fiber Optic Damage Assessment System," Proceedings of the Photonics Applications Systems Technologies Conference, Baltimore, MD, May 2005.

Todd, M., et al., "Towards Deployment of a Fiber Optic Smart Tether for Relative Localization of Towed Bodies," Proceedings of the 2005 SEM Annual Conference and Exposition on Experimental and Applied Mechanics, pp. 1801-1810.

Kiddy, J.S., Baldwin, C.S., Salter, T.J. "Certification of a Submarine Design Using Fiber Bragg Grating Sensors", in Smart Structures and Materials 2004: Industrial and Commercial Applications of Smart Structures Technologies, Proceedings of SPIE Vol. 5388, Bellingham, WA, 2004, pp. 387-398.

Baldwin, C.S., Salter, T.J., Kiddy, J.S., "Static Shape Measurements Using a Multiplexed Fiber Bragg Grating Sensor System", in Smart Structures and Materials 2004: Smart Sensor Technology and Measurement Systems, Proceedings of SPIE Vol. 5384, Bellingham, WA, 2004, pp. 206-217.

Kiddy, J.S., "Remaining Useful Life Prediction Based on Known Usage Data", in Nondestructive Evaluation and Health Monitoring of Aerospace Materials and Composites II, Proc. of SPIE Vol. 5046, Bellingham, WA, 2003, pp. 11-18.

Morel-Fatio, S., Pines, D.J., Kiddy, J.S., "UAV Performance Enhancements with Piezoelectric Synthetic Jet Actuators," 41<sup>st</sup> Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 6-9, 2003.

Baldwin, C.S., et al., "Fiber Optic Structural Health Monitoring System: Rough Sea Trials Testing of the RV Triton," Proceedings of MTS/IEEE Oceans Conference and Exposition, 2002, Vol. 3, pp. 1806-1813.

Kiddy, J.S., et al., "Low-Cost Light-Than-Air Surveillance System for Civilian Applications," Sensors and Command, Control, Communications, and Intelligence (C3I) Technologies for Homeland Defense and Law Enforcement, Proceedings of SPIE Vol. 4708, 2002, Bellingham, WA, 2002.

Kiddy, J.S., et al., "Structural Load Monitoring of the RV Triton Using Fiber Optic Sensors", in Smart Structures and Materials 2002: Industrial and Commercial Applications of Smart Structures Technologies, Proceedings of SPIE Vol. 4698 (SPIE, Bellingham, WA 2002), pp. 462-472.

Baldwin, C.S., et al, "Structural Monitoring of Composite Marine Piles Using Multiplexed Fiber Bragg Grating Sensors: in-field applications", in Smart Structures and Materials 2002: Smart Systems for Bridges, Structures, and Highways, Proceedings of SPIE Vol. 4696, Bellingham, WA, 2002, pp. 82-91.

Baldwin, C.S., et al., "Structural Testing of Navy Vessels Using Bragg Gratings and a Prototype Digital Spatial Wavelength Domain Multiplexing (DSWDM) System," Naval Engineers Journal, Vol. 114, pp. 63-70, January 2002.

Baldwin, C.S., Kiddy, J.S., et al., "Structural Testing of a Navy LPD-17 Propulsion Propeller Using Bragg Grating Sensors and Digital Spatial Wavelength Domain Multiplexing (DSWDM)", in Smart Structures and Materials 2001: Industrial and Commercial Applications of Smart Structures Technologies, Proceedings of SPIE Vol. 4332, Bellingham, WA, 2001, pp. 124-132.

Christiansen, M.B., Kiddy, J.S., et al., "Digital Spatial Wavelength Domain Multiplexing (DSWDM) Using a Prism-Grating-Prism (PGP) and a CMOS Imager: Implementation and Initial Testing", in Smart Structures and Materials 2001: Sensory Phenomena and Measurement Instrumentation for Smart Structures and Materials, Proceedings of SPIE Vol. 4328, Bellingham, WA, 2001, pp. 88-95.

Kiddy, J.S., Chen, P.C., and Niemczuk, J.B., "Temperature-Compensated Flat-Pack Fiber Optic Strain Gage: Design and Fabrication", in Smart Structures and Materials 2001: Smart Structures and Integrated Systems, Proceedings of SPIE Vol. 4327, Bellingham, WA, 2001, pp. 651-659.

Kiddy, J.S., Niemczuk, J.B., and Chen, P.C., "Low-Cost Inflatable Lighter-than-Air Remote Surveillance System", in Enabling Technologies for Law Enforcement and Security, Proceedings of SPIE Vol. 4232, Bellingham, WA, 2001, pp. 244-251.

Kiddy, J.S., and Pines, D.J., "Experimental Validation of a Damage Detection Technique for Helicopter Main Rotor Blades," Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering, Vol. 215, No. 3, 2001.

Kiddy, J.S., Chen, P.C., and Ross, P., "Ship Health Monitoring," Encyclopedia of Smart Materials", John Wiley & Sons, Inc. New York, NY, 2000.

Kiddy, J.S., Chen, P.C., Niemczuk, J., DeVoe, D., and Kiger, K., "Active Flow Control Using Microelectromechanical Systems," AIAA-2000- 1561, AIAA/ASME/AHS Adaptive Structures Forum, April 3-6, 2000, Atlanta, GA.

Kiddy, J.S. and Pines, D.J., "The Effects of Aerodynamics Damping on Damage Detection in Helicopter Main Rotor Blades", Proceedings of the 58th Annual Forum of the American Helicopter Society, May 25- 27, 1999, Montreal, Canada.

Kiddy, J.S. and Pines, D.J., "An Eigenstructure Assignment Technique for Damage Detection in Rotating Structures", AIAA Journal, Vol. 36, No. 9, 1998, pp. 1680-1685.

Kiddy, J.S. and Pines, D.J., "Constrained Damage Detection Technique for Simultaneously Updating Mass and Stiffness Matrices", AIAA Journal, Vol. 36, No. 7, 1998, pp. 1332-1334.

Kiddy, J.S. and Pines, D.J., "Damage Detection of Main Rotor Faults Using a Sensitivity Based Approach", SPIE Smart Structures and Materials Conference, March 3-6, 1997, San Diego, CA.

Brandon, J.M., Simon, J.M., Owens, D.B., and Kiddy, J.S., "Free-Flight Investigation of Forebody Blowing for Stability and Control," Atmospheric Flight Mechanics Conference, July 29-31, 1996, San Diego, CA.