

*Resume of*

*Dr. James Edward Hubbard, Jr.*

**WORK ADDRESS**

National Institute of Aerospace  
Room 236  
100 Exploration Way  
Hampton, VA 23666  
757-325-6830

**EDUCATION**

**Massachusetts Institute of Technology**

Doctor of Philosophy, 2/82  
Master of Mechanical Engineering, 2/79  
Bachelor of Mechanical Engineering, 6/77

**Morgan State College**

Physics Major 2/72 to 6/74

**Calhoon MEBA Marine Engineering School**

United States Coast Guard Certified  
Marine Engineers License, 12/71  
(Unlimited Horsepower Steam and Diesel  
Engine Designation)

**Baltimore Polytechnic Institute**

Engineering High School Diploma, 6/69

**EMPLOYMENT  
EXPERIENCE**

**University of Maryland**

**(2004- )**

**Full Professor  
Aerospace Engineering Department**

Langley Professor at the University of Maryland. Full Professor in the Department of Aerospace Engineering charged with the development of new curricula and research programs in the areas of adaptive structures, smart structures and morphing vehicle technology.

**National Institute of Aerospace (NIA)**

**(2004- )**

**Langley Distinguished Professor**

The Langley Professor at NIA in the field of Smart, Adaptive Aerospace Vehicle Technology and Concept Development charged with the development and leading of a multidisciplinary team pursuing revolutionary research to enable efficient, multi-point vehicles providing performance on demand and operating in an integrated airspace-vehicle environment. In addition the Langley Professor explores applications of emerging technologies for revolutionary vehicle concepts, including the exploration of bio-inspired approaches to controls and autonomous behaviors, and the potential application of biomimetic, nanostructured, multifunctional materials.

*Employment Experience of Dr. James E. Hubbard, Jr. (Cont'd.)*

**iProvica** (2000-2004)  
**Co-Founder**  
*Chief Technology Officer*

Co-Founder and Chief Technology Officer of iProvica a product oriented company providing low cost, portable and tether free (wireless) products for non-acute care facilities to continuously monitor patients activities and vital signs. Responsible for product development, transition to manufacturing and off-site Beta testing as well as corporate Strategic Planning and execution.

**PhotoSense, Inc.** (1998-2001)  
**Co-Founder**  
*Chief Technology Officer*

Co-Founder and Chief Technology Officer for PhotoSense Inc. a Research and Development Company focused on developing a technology platform using SmartSkin Sensors. The Company developed and patented SmartSkins (thin blankets of sensors and systems) that can be used to monitor hospital patients, measure stress levels and gait in orthopedic patients and sports athletes as a well as a SmartSeat that help improve the safety of automobile seats.

**Boston University** (1995-Present)  
**Photonics Center**  
*Senior Systems Engineer*

Senior technical manager responsible for technical strategic planning, technology transition and prototyping in the Boston University Photonics Center. This includes the generation of business plans, technical proposals, strategic corporate alliances etc. which facilitate the successful transition of new technologies to commercial products and ventures. Direct reporting to the Center Director.

**Optron Systems, Inc.** (1992-1995)  
*Executive Vice President*

Management of and responsibility for the day to day operations of the company. This encompassed all aspects of corporate operations including research, finances, personnel, strategic corporate planning, facilities management, procurement, etc. Duties also encompassed fund raising, Congressional and Department of Defense lobbying, formation of Corporate strategic alliances at the highest echelons, and the development of the Strategic Operating Plan. current activities include fund raising and capitalization of a "spin off" company to be known as *Light Wave Technologies, Inc.* This company will be the commercial manufacturing arm of its parent corporation, Optron Systems, Inc. Duties involve commercial product development, writing of the business plan, 5 year financial analysis and projections, fund raising via a combination of venture capital, debt and equity financing and private placements.

**Optron Systems, Inc.** (1991-1992)  
*Vice President for Research*

Responsible for all corporate IR&D activities including both strategic and tactical short planning. Developed and refined core component and system technologies related in the fields of opto-electronics and photonics.

*Employment Experience of Dr. James E. Hubbard, Jr. (Cont'd.)*

**Charles Stark Draper Laboratory (1985-1991)**  
***Chief of Adaptive Sensors Section***  
(Sensor Systems and Data Processing Directorate)

Managed elite technical "tiger team" which developed programs centered on the design, analysis and development of innovative sensors and system concepts which support corporate missions and goals in the area of smart guidance systems. Management line included direct access to the Corporate Executive Vice President. Performed classified R&D activities requiring front line management of multi-million dollar programs involving strategic industrial alliances as well as numerous government agencies. Government security clearances included Secret, Top Secret and SCI.

Developed and patented novel deformable mirror, wavefront control, distributed transducers and smart skin technologies.

**Massachusetts Institute of Technology (1985-1994)**  
***Lecturer, Department of Mechanical Engineering***

Supervised graduate student masters and Phd. level research. Chaired Phd. thesis committees and published technical articles in the open literature in the form of peer reviewed journal papers and book chapters, technical notes and magazine articles.

**Massachusetts Institute of Technology (1981-1985)**  
***Assistant Professor of Mechanical Engineering***

Responsible for the development and teaching of core courses in the area of System Dynamics, Classical Controls, Instrumentation and Measurement Laboratories. Pioneered the use of piezo-film as a transduction element for structural control.

Authored original patents on a technique for using film as a "smart skin". Achieved international recognition for original research in the area of smart skins, distributed transducers and structural controls.

Supervised graduate students and performed service on committees both inside and external to M.I.T.

*Noteworthy M.I.T. service committees include;*

Mechanical Engineering Department Head Search Committee  
Mechanical Engineering Department Service Award Selection Committee  
MIT Goodwin Medal Selection Committee  
DeFlorez Award Committee  
Associate Director of M.I.T. Second Summer Program  
Chairman of M.I.T. Undergraduate Committee  
Master of Ceremonies at 1982 Speakers Banquet of National Society of Black Engineers  
Chairman of American Helicopter Societies Litchen Award

**Massachusetts Institute of Technology (1977-1978)**  
***Instructor-G, Department of Mechanical Engineering***

Responsibilities included teaching, preparation of Departments Annual Report, arranging and conducting tours for visiting dignitaries, and developing undergraduate laboratory courses and materials.

*Employment Experience of Dr. James E. Hubbard, Jr. (Cont'd.)*

**E.I. DuPont de Nemours, Chambers Works Plant (1976)**  
***Summer Engineering Intern***

Responsible for establishing an energy conservation program for operation in the plants chilled water facility which serviced some 10,000 employees and was one of DuPont's largest facilities.

**U.S. Naval Ship Research and Development Center (1974-1975)**  
***Engineering Co-op (Morgan State College)***

Assigned to the Gas Turbines branch with responsibility for the analysis of marine boilers and feedwater treatment in nuclear submarines (1974); as well as simulation of hovercraft and hydrofoil vehicle dynamics.

**U.S. Merchant Marine (1970-1971)**  
***Engineering Officer-Engine Cadet***

Served aboard a broad class of merchant ships in connection with training at the Calhoun MEBA Marine Engineering School. Served most of this year on vessels bound for Viet-Nam in support of the U.S. war efforts. Served in an engineering capacity on ships ranging in horsepower from 7,000 to more than 30,000 SHP gaining experience in all aspects of marine power plant operation including turbo-electric, steam and diesel, as well as automated vessels.

***HONORS***

◦ February 2002 recipient of the 2002 Black Engineer of the Year President's Award. This award represents recognition of high merit, broad effect on people in many disciplines, and high value to the society as a whole. More specifically, the President's Award goes to an individual of high personal achievements who has made a major impact on a company's products and profits and has broad managerial reach.

◦ In January 2001 was featured in the book, Technology and the Dream published by the MIT Press which chronicled 50 years of the African American experience at MIT.

◦ In June of 2000 was awarded "The Key to the City" of his hometown Danville, Virginia for Lifetime Achievements and Community service.

◦ Career research in Smart Structures was highlighted in the 2001 edition of SPIE, The International Society for Optical Engineering, Smart Structures "Milestone Series of Selected Reprints: Collections of outstanding papers from the world literature on optical and opto-electronic science, engineering, and technology".

◦ 1999 recipient of SPIE, The International Society for Optical Engineering, Smart Structures Product Innovation Award.

◦ 1993 recipient of the Charles Stark Draper Engineering Vice Presidents Annual Award for Best Technical Patent for "*Wideband, Derivative -Matched, Continuous Aperture Acoustic Transducer*"

◦ 1993 nominee for the Charles Stark Draper Engineering Vice President's Annual Award for Best Paper, 1993 in connection with the publication of "*Modeling Approach for Two-Dimensional Distributed Transducers of Arbitrary Spatial Distribution*"

- 1991 recipient of Charles Stark Draper Engineering Vice Presidents Annual Award for Best Invention for "*Pressure Distribution Characterization System*"
- 1990 recipient of Charles Stark Draper Significant Patent Award for "*Real-Time Wavefront Sensor for Coherent Wavefront Characterization*"
- 1987 listing in "Who's Who in the East"
- 1984 Selected as NASA Astronaut Candidate
- 1983 recipient of IBM Young Faculty Development Award
- 1981 Vertical Flight Foundation Fellow
- 1981 listing in Jane's "Who's Who in Aviation and Aerospace", U.S. Edition
- 1981 listing in Jaycees: "Outstanding Young Men in America"
- 1979 recipient of M.I.T. Goodwin Medal for "*Conspicuously Effective Teaching*"
- 1976 recipient of the Scott Paper Foundation Award for "*Outstanding Scholarship and Leadership*"
- 1976 recipient of the M.I.T. Stewart Award for "*Outstanding Service to the Community*"

## ***SERVICE***

- March 2005 appointed to National Research Council's Panel C on Telescopes/Observatories and Instruments and Sensors, one of ten panels to review NASA's Capability Roadmaps
- 1994 recipient of Certificate of Appreciation for "*Outstanding Service*" to the National Research Council's Air Force Studies Board
- 1993 appointment to Advisory Board of the Simmons Center for Teaching and Learning in Science and Technology
- 1998 appointment to National Science Foundations Committee of Visitors for Civil and Mechanical Systems Division
- 1996 appointment to Naval Research Advisory Committee (Senior scientific advisory group to Secretary of the Navy, Chief of Naval Operations, Commandant to the Marine Corps, and the Chief of Naval Research)
- 1994 appointment to National Aeronautics and Space Administration (NASA) Aeronautics Advisory Committee (Senior scientific advisory group to the NASA Associate Administrator for Aeronautics)
- 1991 Charles Stark Draper Section award for "*Outstanding Service and Technical Leadership*"
- 1990 recipient of Certificate of Appreciation for "*Outstanding Service*" to the National Research Council's Committee on Strategic Relocatable Targets.
- 1990 appointment to National Research Council's Committee on Assessment of Defense Space Technology (Senior scientific advisory group to USCINCPAC Air Force)

Space Command and USCINCH NORAD)  
°1987 appointment to the National Research Council's Air Force Studies Board  
(Senior scientific advisory group to USCINC Air Force Systems Command)

## **MEMBERSHIPS**

Past memberships include the following professional organizations:

- New England Board of Higher Education Minority Mentors Program
- Sigma Xi Honor Society
- American Society of Mechanical Engineers
- American Helicopter Association
- National Technical Society
- National Society of Black Engineers
- American Institute of Aeronautics and Astronautics
- AIAA Aeroacoustics Sub-committee

## **PATENTS**

°Patient Monitoring System Employing Array of Force Sensors on a Bedsheet or Similar Substrate: U.S. Patent Number **6,840,117 B2**, January 2005.

°Patient Monitoring System Employing Array of Force Sensors on a Bedsheet or Similar Substrate: U.S. Patent Number **6,546,813 B2**, April 15, 2003.

°In-Shoe Remote Telemetry Gait Analysis System: U.S. Patent Number **6,360,597 B1**, March 2002.

°Sensor System and Method for Measuring Time-varying Stress Patterns over the Surface of a Body: U.S. Patent Number **6,223,606** May 1, 2001.

°Center of Weight Sensor: U.S. Patent Number **5,821,633** October 13, 1998.

°Center of Weight Sensor: U.S. Patent Number **6,223,606 B1** May 1, 2001.

°A Smart Skin Sensor for Real-Time Side Impact Detection and Off-Line Diagnostics: U.S. Patent Number **5,797,623** September 3, 1998.

°Wideband, Derivative-Matched, Continuous Aperture Acoustic Transducer: U.S. Patent Number **5,327,397** July 5, 1994.

°Active Mirror Assembly: U.S. Patent Number **5,159,498** October 27, 1992.

°Wavefront Sensing and Correction with Deformable Mirror: U.S. Patent Number **5,026,977** June 25, 1991.

°Pressure Distribution Characterization System: U.S. Patent Number **5,054,323** October 8, 1991.

°Real-Time Wavefront Sensor for Coherent Wavefront Characterization: U.S. Patent Number **4,935,614** June 19, 1990.

°Method and Apparatus Using a Piezoelectric Film for Active Control of Vibrations: U.S. Patent Number **4,565,940** January 21, 1986.

°Method and Apparatus for Active Control of Vibrations: U.S. Patent Number **4,626,730** December 02, 1986.

## **PERSONAL DATA**

Birthplace: Born in Danville, Virginia December 21, 1951. Currently resides in tidewater Virginia with his wife Adrienne, three sons James, Drew and Jordan, and his pure bred German Shepherd "Nite".