Biographical Description for The HistoryMakers® Video Oral History with Joycelyn Harrison

PERSON

Harrison, Joycelyn S.

Alternative Names: Joycelyn Harrison;

Life Dates: January 22, 1964-

Place of Birth: Chattanooga, Tennessee, USA

Residence: Arlington, Virginia

Work: Arlington, Virginia

Occupations: Chemical Engineer

Biographical Note

Inventor and chemical engineer, Joycelyn Harrison was born on January 22, 1964. She received her B.S. in chemistry from Spelman College in Atlanta, Georgia in 1987. She then went on later that year to earn her B.S. in chemical engineering from Georgia Institute of Technology. Harrison remained at Georgia Tech as a graduate student and completed her M.S. in chemical engineering in 1989 and her Ph.D. in 1993. She completed her dissertation on the "Structure-Dielectric Property Relationships in An Epoxy System: A Free Volume Analysis."

After graduate school Harrison went on to work at the Advanced Materials and Processing Branch (AMPB) of NASA's Langley Research Center in Hampton, Virginia in 1994 as a research engineer under the tutelage of Terry L. St. Clair. While at Langley, Harrison conducted much of her research in the field of piezoelectric materials, a class of polymers capable of producing mechanical motion when introduced to an electric current and conversely capable of generating an electric charge when subjected to stress. Her research culminated with her participation on the Thin-Layer Composite-Unimorph Piezoelectric Driver and Sensor ("THUNDER") project with several colleagues, including senior engineer Robert Bryant. The THUNDER team innovated new piezoelectric polymers that improved upon the existing commercial varieties by providing better durability, energy efficiency, and production costs. In 1999, Harrison became chief of AMPB, which required her to supervise more than 40 research scientists conducting research on polymer composites and ceramics synthesis. NASA recognized Harrison's contributions to the AMPB branch by awarding her the Exceptional Achievement Medal in 2000 and the Outstanding Leadership Medal in 2006.

Harrison's personal achievements include a number of patents for piezoelectric substrates that she invented between 1999 and 2008, which have applications both within the aerospace industry for the repair of satellites and the commercial sector for improvements in devices, such as robots, heart pumps and audio speakers. In 2009, Harrison became the manager of the Low Density Materials program at the Air Force Office of Scientific Research in Arlington, Virginia, which seeks to attain reductions in weight of aerospace systems while simultaneously improving overall efficiency.

Harrison resides in Arlington, Virginia.

Harrison was interviewed by The HistoryMakers on July 14, 2012.

Related Entries

NASA LANGLEY RESEARCH CENTER National Research Council Post-Doctoral Associate [STUDENTOF]
[from ? to ?]

Georgia Institute of Technology [STUDENTOF]
[from ? to ?]

Ph.D.

Georgia Institute of Technology [STUDENTOF]
[from ? to ?]

M.S.

Georgia Institute of Technology [STUDENTOF]
[from ? to ?]

B.S.

Spelman College [STUDENTOF]
[from ? to ?]

B.S.

National Aeronautics and Space Administration (NASA) Langley Research Center [EMPLOYEEOF]
[from 1995 to 1999]

Project Management

Thomas Nelson Community College [EMPLOYEEOF]
[from 1995 to 1996]

Chemistry Laboratory Instructor

National Aeronautics and Space Administration (NASA) Langley Research Center [EMPLOYEEOF]
[from 1968 to ?]

Branch Chief, Advanced Materials and Processing Branch

National Science Foundation (NSF) [EMPLOYEEOF]
[from 2007 to 2009]

Program Director, Materials Processing and Manufacturing Program (MPM), Civil Mechanical, and Manufacturing Innovation Division, Engineering Directorate.

United States Air Force Oiffice of Scientific Research (AFOSR) [EMPLOYEEOF]
[from 2009 to 1989]

AIR FORCE OFFICE OF SCIENTIFIC RESEARCH (AFOSR):

Imperial College London [MEMBEROF]
[from 1986 to 1986]

Completed Chemical Engineering Laboratory Exchange Program