

Joseph M. Giachino, Fellow, IEEE

Director of External Programs,
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UNIVERSITY OF MICHIGAN

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Role in the Center: Technology Transfer Director

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Areas of Research: Technology transfer for solid-state devices, microsystems, and other related technologies.

A. PROFESSIONAL PREPARATION

New York University
New York University

Engineering Physics, B.S., 1959
Engineering Physics, M.S., 1961

B. APPOINTMENTS

Director of External Programs , EECS Department, University of Michigan	2001-present
Senior Technical Specialist , Ford Motor Company (Visteon)	1976-2001
Manager of Measurement Technology , Bailey Control (B&W Subsidiary)	1974-1976
Senior Research Physicist , Babcock and Wilcox Research Center	1967-1974
Senior Associate Scientist , Teledyne-Isotopes	1964-1967
Research Assistant , NYU Radiation and Solid State Lab	1962-1964

C. SYNERGISTIC ACTIVITIES

As Associate Director of the Center for Wireless Integrated Microsystems he is in charge of developing and coordinating Center research activities with member companies and facilitates technology transfer to member companies.

He has demonstrated capability to lead complex technical projects, manage cross-functional teams, and transfer new technology into high volume manufacturing facilities. These programs/projects include:

- Silicon Capacitance Absolute Pressure (SCAP) Sensor. Led team that conceived, developed and transferred sensor to production. This program introduced the first commercial use of a bulk silicon micromachined capacitive sensor. The program included a custom ASIC with a frequency output and a custom package. Annual volumes were approximately 4 million/year for eight years.
- Silicon Micromachined Nozzles for Fuel-Injectors. Conceived concept demonstrated feasibility, and lead cross-functional team that transferred the process from research facility to production facility. Three million units produced.
- Silicon Micromachined Air Bag Accelerometer. Led cross-functional team that developed process for sensing element and ASIC. Led team that transferred the sensing element from research facility to production facility. Annual volumes were an average of two million over three years.
- Piezoresistive Pressure Sensor. Led team that developed a process for piezoresistive pressure sensing elements. Transferred the process from research facility to production facility. Later was manager at Bailey Control that included the production facility. Annual volumes were an average of 10,000.
- Silicon Micromachined Valves. Led team that developed vertically actuated valves and sliding valves using bulk silicon wet etching and fusion bonding.

Honors awarded include: The Henry Ford Technology Award (1981) -"Conceiving and Developing New Technology Engine Control Pressure Transducer"; Society of Plastics Engineer Award- Most innovative Use of Plastics (1985) ; and Elected as a Fellow of the IEEE (1997)-"Contributions to micromechanical and Microelectromechanical Control Systems".

He holds 14 patents.

Professional activities include: Member of Japanese Technology Evaluation Center Panel on MicroelectroMechanical Systems (MEMS)-(Six invited United States Members:NSF Sponsored)-1993; Board Member and Treasurer of Transducers Research Foundation- 1992 -2006; Member of External Advisory Board of "Program of Manufacturing" at University of Michigan -1994 to 1998; Member/ IEEE/ASME Journal Coordinating Committee for the Journal of Micromechanical Systems-1998 to Present; Member of the NSF Sensors For Harsh Environments STTR Phase I Panel 1999; Member of the Sensors EXPO Advisory Board - 2005 - present; and Member of the Michigan Small Tech (MISTA) Advisory Board- 2004 - present.

D. RELATED PUBLICATIONS

1. M.E. Behr, C. F. Bauer, and J. Giachino, "Miniature Silicon Capacitance Absolute Pressure Sensor," 3rd International Conference on Automotive Electronics, 1981, p. 255-260
2. J.M. Giachino, "Sensor Packaging for the 90's," 3rd International Ceramic Science and Technology Congress, p. 197-208, 1992 (Invited).
3. J.M. Giachino, "A Microminiature Pressure Sensor for Automotive Applications," 10th International Symposium on Automotive Technology and Automation, Sept. 1981.
4. K. Wise, J.M. Giachino, H.Guckel, G Hocker, S. Jacobsen and R. Muller, "Microelectromechanical Systems in Japan," Japanese Technology Evaluation Center (NSF Sponsor), p. 1-295, Nov. 1994
5. J.M. Giachino, "Automotive Sensors-Challenge and Opportunity," American Society, May 1987 (Invited).
6. J.M. Giachino and J. Konrad, "Gas Sensing in the Automotive," NIST Conference, Sept. 1993 (Invited).
7. J.M. Giachino, "Automotive Sensors Driving Toward Optimized Vehicle Performance," 7th International Conference on Solid State Sensors and Actuators, p. 982-987, June 1993.
8. J.M. Giachino and T.J. Miree, "The Challenge of Automotive Sensors" SPIE Symposium and Micromachining and Microfabrication, p. 89-98, Oct. 1995 (Invited).
9. J.M. Giachino, T.W. Keranan, and D. McNamara, "Systems Approach to Semiconductor Transducer Design," 11th International Symposium on Technology and Automation, Sept. 1982.
10. J.M. Giachino, "Microfabricated Sensor Development in the Automotive Industry," ASICT'90 3rd International Forum on ASIC and transducer Technology (invited).

E. RELATED PATENTS

1. # 7,098,117 August 28, 2006 Method for Manufacturing a Package with Substantially Vertical Feedthroughs for Micromachined or MEMS devices
2. # 6,958,531 Oct. 25, 2005 "Multi Substrate Package and Method for Assembling
3. #6,655,504 December 2, 2003 "Braking Assembly and system"
4. #6,571,820 June 3, 2003- "Concealed Air Vents"
5. #6,547,117 "Container Holder That Utilizes Moldline Structures"
6. #4,907,748 March 13, 1990 " Fuel Injector with Silicon Nozzle"
7. #4,742,265 May 3, 1998 "Spark Plug Center Electrode of Alloy Material Including Aluminum and Chromium."
8. #4,768,751 Sept. 6, 1988 " Silicon Micro-Machined non-elastic Flow Valves"