



Harold Stalford

RESEARCH INTERESTS

Quantum computing, quantum dots, donor atom quantum sensors, nanotechnology, Microelectromechanical systems (MEMS), tunable MEMS devices (resonators, inductors), RF nanotechnology, microfluidics, on-chip micro-devices (micro-vacuum-pumps, micro-robotics, micro-mobile-transportation).

BIOGRAPHY

Dr. Harold Stalford, received his PhD from the University of California, Berkeley in 1970. Prior to his current position, he was the Director of the School of Aerospace and Mechanical Engineering at the University of Oklahoma. His career spans industry, government labs, and academia including faculty appointments at Georgia Tech and Virginia Tech. He has been a consultant for the Sandia National Laboratories since 2001. He has co-authored more than 100 technical publications in microelectromechanical systems (MEMS), nanotechnology, and control theory and applications. The publications includes two U.S. patents in the field of tunable micro-resonators and tunable micro-inductors. He has spent two sabbaticals at the Sandia National Laboratories, Albuquerque, N.M. where he developed MEMS and microfluidic devices for cell lysing, designed and fabricated micro-robotics devices on-chip, modeled and simulated silicon quantum dot devices and where he designed, fabricated and tested tunable RF nanotechnology devices. His current teaching includes advising students in MEMS design. His student teams have won the 1st place Novel Design award of the MEMS University Alliance Design Competition at Sandia for the years 2007, 2008 and 2009.

AWARDS, HONORS AND PROFESSIONAL ACTIVITIES

American Institute of Aeronautics and Astronautics

American Society of Mechanical Engineers

Institute of Electrical and Electronics Engineers

Education

PhD, Mechanical Engineering
University of California,
Berkeley, 1970
MS, Mechanical Engineering
University of California,
Berkeley, 1966
BS, Mechanical Engineering
Oklahoma State University,
1965

Positions

Professor
University of Oklahoma
Consultant
Sandia National Labs
Professor
Georgia Tech
Associate Professor
Virginia Tech
Staff Engineer
Dynamics Research Corporation
& Naval Research Lab

SELECTED PUBLICATIONS

- “Microelectromechanical Turnable Inductor,” U.S. Patent #7,710,232, May 4, 2010 (with J.G. Fleming and V.M. Hietala).
- “Multi-tunable Microelectromechanical System (MEMS) Resonators,” U.S. Patent #7,095,295, August 22, 2006 (with M.A. Butler and W.K. Schubert).
- “Double Quantum Dot with Tunable Coupling in an Enhancement-mode Silicon Metal-oxide Semiconductor Device with Lateral Geometry,” *Applied Physics Letters*, Vol. 97, 192110, 2010 (with L.A. Tracy, E.P. Nordberg, R.W. Young, C. Borrás Pinilla, G.A. Ten Eyck, K. Eng, K.D. Childs, J.R. Wendt, R.K. Grubbs, J. Stevens, M.P. Lilly, M.A. Eriksson and M.S. Carroll).
- “Capacitance Modeling of Complex Topographical Silicon Quantum Dot Structures,” Accepted for publication in *IEEE Technology*, 2010 (with R. Young, E.P. Nordberg, J.E. Levy, C. Borrás Pinilla and M.S. Carroll).
- “Charge Sensing in Enhancement Mode Double-top-gated Metal-oxide Semiconductor Quantum Dots,” *Applied Physics Letters*, Vol. 95, 202102, 2009 (with E.P. Nordberg, R. Young, G.A. Ten Eyck, K. Eng, L.A. Tracy, K.D. Childs, J.R. Wendt, R.K. Grubbs, J. Stevens, M.P. Lilly, M.A. Eriksson and M.S. Carroll).
- “Enhancement-mode Double-top-gated Metal-oxide-semiconductor Nanostructures with Tunable Lateral Geometry,” *Physical Review B*, Vol. 80, 115331, 2009 (with E.P. Nordberg, G.A. Ten Eyck, R.P. Muller, R.W. Young, K. Eng, L.A. Tracy, K.D. Childs, J.R. Wendt, R.K. Grubbs, J. Stevens, M.P. Lilly, M.A. Eriksson and M.S. Carroll).