Graduate Seminar (EEL 6936)
Department of Electrical Engineering
http://ee.eng.usf.edu/Grad_Seminar

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Friday, October 17, 2014, 3:35-4:25 p.m., ENB 109

Complete System Integration: A MEMS Sensor Starting From Scratch

Abstract

The speaker will present an in-depth view of a complete MEMS sensor from beginning to end. His research dissertation was titled "Evanescent Wave Coupling Using Different Period Subwavelength Gratings for an Optical MEMS Accelerometer". Using this novel technique for a sensor, he structured his research into four phases. Namely, the first phase consisted of theoretical derivation and simulation of evanescent wave coupling from two different period subwavelength structures. The second phase of his research examined the analysis of the accelerometer device, specifically theoretical and simulation accelerometer spring/proof mass design, and spring constant force and displacement. The third phase focused on subwavelength grating fabrication and designing the entire sensor. Finally, the last phase of his project tested and evaluated his completed MEMS optical accelerometer.

Biography

Dr. Rogers earned both his B.S. and M.S. degrees from North Carolina Agricultural and Technical State University in Electrical Engineering (2003, 2005) and his Ph.D. from the University of South Florida in Electrical Engineering (2011). He has published peer-reviewed journal articles and conference papers, and has also given international presentations/research-training seminars. Dr. Rogers is also an inventor/co-inventor of several patents. His awards includes an Alfred P. Sloan Foundation Minority Graduate Scholarship, two NSF Louis Stokes Alliance for Minority Participation (LSAMP) Bridge to the Doctorate Fellowships, a NSF East Asia Pacific Summer Institute (EAPSI) Fellowship in China, McKnight Doctoral Fellowship, and one of USF's highest student honors—The Golden Bull Award in 2011. Dr. Rogers is currently a Senior Member of Technical Staff at Draper Laboratory in St. Petersburg, FL, where he is responsible for developing and integrating new processes for multi-chip-module (MCM) and i-UHD (integrated ultrahigh-density) technologies. His current research uses the physics of evanescent wave coupling to create unique identity markers and tamper protection as an innovative and reliable solution for electronic packaging. He is also continuing his national leadership work in STEM outreach by mentoring students representing Draper Laboratory in national conferences, career fairs, and presentations at professional societies.