

Michigan State University
Science at the Edge
Engineering Seminar

January 23rd, 2015

11:30 a.m., Room 1400 Biomedical and Physical Sciences Building

Refreshments served at 11:15 a.m.

John Rogers

Department of Materials Science and Engineering
University of Illinois at Urbana-Champaign

Stretchy Electronics That Can Dissolve In Your Body

Abstract

Biology is soft, curvilinear and transient; silicon technology is rigid, planar and everlasting. Electronic systems that eliminate this profound mismatch in properties create opportunities for devices that intimately integrate with biology, with application possibilities that range from tools for basic research to instruments for clinical medicine. Recent work establishes a set of materials, mechanics concepts and fabrication approaches for such a technology. This talk describes the key ideas, with examples in cellular-scale, 'injectable' light emitting diodes, 'epidermal' skin-mounted sensors and bioresorbable electronic implants.

Bio

Professor John A. Rogers obtained BA and BS degrees in chemistry and in physics from the University of Texas, Austin, in 1989. From MIT, he received SM degrees in physics and in chemistry in 1992 and the PhD degree in physical chemistry in 1995. From 1995 to 1997, Rogers was a Junior Fellow in the Harvard University Society of Fellows. He joined Bell Laboratories as a Member of Technical Staff in the Condensed Matter Physics Research Department in 1997, and served as Director of this department from the end of 2000 to 2002. He is currently Swanlund Chair Professor at University of Illinois at Urbana-Champaign, with a primary appointment in the Department of Materials Science and Engineering. He is also Director of the Seitz Materials Research Laboratory.

Rogers' research includes fundamental and applied aspects of materials and patterning techniques for unusual electronic and photonic devices, with an emphasis on bio-integrated and bio-inspired systems. He has published more than 450 papers and is inventor on over 80 patents, more than 50 of which are licensed or in active use. Rogers is a Fellow of the IEEE, APS, MRS and AAAS, and he is a member of the National Academy of Engineering and the American Academy of Arts and Sciences. His research has been recognized with many awards, including a MacArthur Fellowship in 2009, the Lemelson-MIT Prize in 2011, and in 2013, the MRS Mid-Career Researcher Award, the Smithsonian Award for American Ingenuity in the Physical Sciences and an Honoris Causa Doctorate from the École Polytechnique Fédérale de Lausanne.

For further information please contact Prof. Richard Lunt, Department of Chemical Engineering and Materials Science at
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Persons with disabilities have the right to request and receive reasonable accommodation. Please call the Department of Chemical Engineering and Materials Science at 355-5135 at least one day prior to the seminar; requests received after this date will be met when possible.