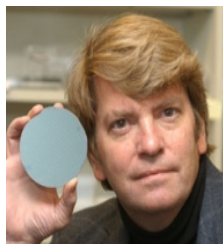


LABEL-FREE SENSING WITH SILICON NANOWIRES

Online Seminar: 12th February 2009, 15.00- 16.00 GMT



Prof. Mark Reed

Harold Hodgkinson Chair of Engineering
Applied Science Associate Director of the Yale Institute for Nanoscience
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Yale University, USA

Nanoscale electronic devices have the potential to achieve exquisite sensitivity as sensors for the direct detection of molecular interactions, thereby decreasing diagnostics costs and enabling previously impossible sensing in disparate field environments. Semiconducting nanowire-field effect transistors (NW-FETs) hold particular promise, though contemporary NW approaches are inadequate for realistic applications.

Focus of the talk:

- A novel approach using complementary metal-oxide-semiconductor (CMOS) technology that has not only achieved unprecedented sensitivity, but simultaneously facilitates system-scale integration of nanosensors for the first time.
- This approach enables a wide range of label-free biochemical and macromolecule sensing applications, including cell type discrimination through the monitoring of live, stimulus-induced cellular response, and specific protein and complementary DNA recognition assays. An important achievement is the introduction of real-time, unlabeled detection capability, allowing for fundamental studies of cellular activation, and specific macromolecule interactions at <femtomolar concentrations.
- Important aspects of microfluidic integration and Debye screening will be discussed, along with the demonstration of live cell peptide-specific immunoresponse.
- The importance of this unique approach is that it is possible to produce nanowire sensors using methods that are compatible with the semiconductor industry practices and can be integrated with existing electronics.

Speaker Profile:

Mark A. Reed received his Ph.D. in Physics from Syracuse University in 1983, and presently holds the Harold Hodgkinson Chair of Engineering and Applied Science at Yale University, and is the Associate Director of the Yale Institute for Nanoscience and Quantum Engineering. His research activities have included the investigation of electronic transport in nanoscale, molecular, and mesoscopic systems. Mark is the author of more than 175 professional publications and 6 books, has given 17 plenary and over 265 invited talks, and holds 25 U.S. and foreign patents. His awards include the Kilby Young Innovator Award (1994), the Fujitsu ISCS Quantum Device Award (2001), Fellow of the American Physical Society (2003), and the IEEE Pioneer Award in Nanotechnology (2007). Most recently, Reed has designed a new approach for creating nanodevices that allows them to integrate directly with microelectronic systems. This novel technology has broad application for low-cost, highly sensitive detection of molecules including biomolecules for medical diagnostics and therapeutics.

Direct Link:

<http://fcf.interwise.com/fcf/application/PreEvent.asp?x=1&displayIWLogo=&Ecode=193229&Api=1&EmpID=PFIKSID5892&BML=>

Participation and Enquiries: If you would like to join the event, please send an email to: Tiju Joseph, Sensors & Instrumentation KTN, Tel: +44 (0) 20 8943 6594, tiju.joseph@npl.co.uk

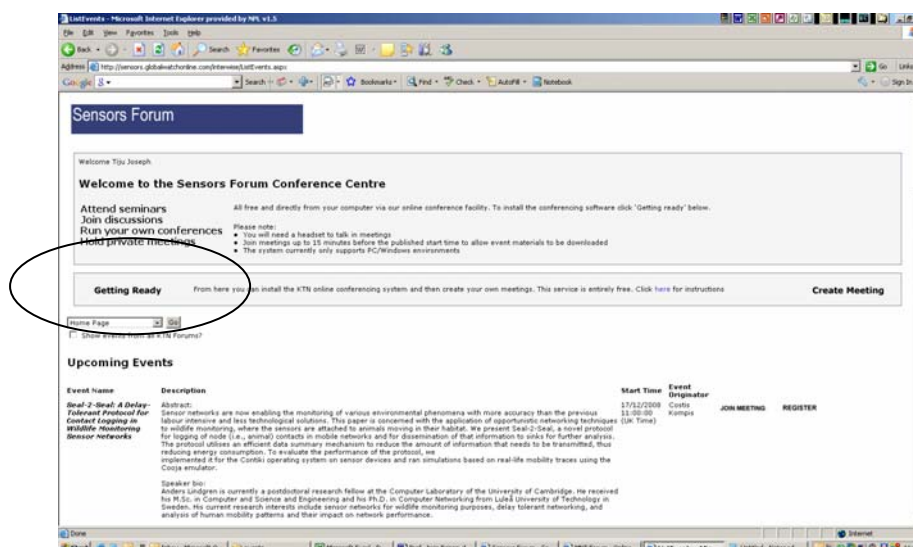
This event is organised by the Micro and Nano Sensors Interest Group (MiNSIG), SIKTN

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