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LICHFIELD **GARRICK**
Theatre & Studio

PRESIDENT

Professor Rex Harris

FREng., FIMMM, FInstP.

8:00 pm on Tuesday 8th April 2014

in the Studio Theatre of the Lichfield Garrick, Castle Dyke, Lichfield

GRAPHENE BASED METROLOGY

Dr T J B M Janssen
National Physical Laboratory

Graphene is a material which promises a myriad of exciting applications across many technologies and a large number of these have been demonstrated in principle in the laboratory. However going from laboratory demonstration to real-life application can be a difficult process and this is where many new technologies have failed. Metrology plays an essential role in this process by providing reliable and reproducible measurement technology to give confidence in the results of research. It provides a basis for the objective comparison of measurement results and can be used to set standards for industry to work towards. Metrology has often been the first adopter of new technologies. In particular, the quantum Hall effect was one of the first discoveries in graphene and it has been the metrological community which has taken this to the most accurate resistance standard in less than six years. Conversely, the demonstration of a high accuracy resistance gives confidence in graphene as a mature technology with real potential. The talk will cover some of the unique properties of graphene and focus on the development of novel measurement standards based on graphene.

JT was born in the Netherlands and received the Master's and PhD degrees in physics from the University of Nijmegen, in 1989 and 1994, for work on the far-infrared magneto-optical properties of low dimensional semiconductor structures and organic conductors. From 1994 to 1998, he was a Research Fellow at the University of Bristol, investigating the Fermi surface properties of heavy Fermion metals and superconductors.

JT joined the National Physical Laboratory in 1998 to set up research on single electron transport. Since that time he has also become involved in the other quantum standards for electrical metrology, namely the Josephson effect and the quantum Hall effect. In 2004 he became the Head of Science for quantum metrology and in 2007 the Head of Science for the Time, Quantum and Electromagnetic metrology division. In 2005 JT was promoted to NPL Fellow and also elected as a Fellow of the Institute of Physics. In 2009 he stepped down from the Head of Science role to concentrate on the new and exciting area of graphene research. JT has published over 100 papers in high profile peer reviewed journals. He represents NPL on the technical committee for electricity and magnetism (TCEM) of the European Association of National Metrology Institutes (EURAMET), is convenor of the EUROMET DC quantum metrology experts group, and is a member of several CCEM and EURAMET working groups.

For further information, please see our website at www.LSES.org.uk

**Admission: Visitors £5.00, Students and Members free but please sign in.
Tickets are not issued in advance: visitors please pay at the auditorium door.
This lecture is expected to finish by 10.00 pm.**