



Lichfield Science & Engineering Society

LICHFIELD **GARRICK**
Theatre & Studio

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Professor Rex Harris

FREng., FIMMM, FInstP.

8:00 pm on Thursday 18th September 2014
in the Studio Theatre of the Lichfield Garrick, Castle Dyke, Lichfield

The Presidential Lecture- RARE EARTH MAGNETS, HYDROGEN & SUSTAINABLE TECHNOLOGIES

Professor Rex Harris

Honorary Professor of Materials Science

School of Metallurgy and Materials, University of Birmingham

Sintered Neodymium Iron Boron and other rare earth magnets are essential in machines such as zero-carbon energy generators and ultra-efficient electric vehicles motors, and Professor Harris' Hydrogen Decrepitation process is now used world wide in their production. Therefore hydrogen is an essential partner in the drive to a low to zero carbon society.

Hydrogen is also a means of off-peak energy storage. Excess electricity can be used to produce hydrogen from water and it is a by-product of some industries. The gas can be liquified under high pressure or stored at lower pressure in a solid metal hydride. In very large quantities it can be stored in underground caverns. It is re-converted to electricity either by combustion or in a fuel cell, both of which are zero-emission processes.

The lecture will cover the application of these technologies to the search for a sustainable energy policy.

Rex has published a number of books and over 500 scientific papers in a range of journals focussed on the structure and constitution of solid solution alloys and intermetallic compounds, with particular emphasis on the rare earth metals. Several of these have dealt with the interaction of hydrogen with intermetallics with the aim of producing a practical hydrogen store such as that employed to drive the rare earth magnet motor on the University's hybrid canal boat, the Ross Barlow. He was recently the Lunar Society's Boulton Watt Lecturer and has given a large number of public lectures on the potential of magnets and hydrogen in the drive towards a low-energy transport system. He continues to be very active in raising public awareness of the dual threats of climate change and resource depletion, a campaign which he considers to be of paramount importance.

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

Visitors £5.00 Tickets are not issued in advance: please pay at the door.

Students and Members must sign in.

This lecture is expected to finish by 10.00 pm.