

UK Magnetics Society

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www.ukmagsoc.org

23rd Ewing Lecture

Professor Geraint Jewell

High Temperature Electromagnetic Devices

Afternoon programme

High Temperature Magnetic Materials and Components

Wednesday, 3 December 2009

at

Oriel College, University of Oxford

There are many potential applications in sectors such as aerospace, automotive and nuclear generation that require electromagnetic devices that are capable of operating reliably in high temperature environments. In the context of electrical machines and actuators, high temperature environments can be regarded as being $>250^{\circ}\text{C}$ which in turn can give rise to internal temperatures of up to 500°C in critical regions such as the excitation coils. Such elevated temperatures present many challenges since almost all aspects of electromagnetic performance tend to diminish with increasing temperature, some very markedly such as coil loss. Furthermore, the range of materials that can be deployed is considerably more limited, particularly in relation to electrical insulation materials, and there tends to be a dearth of reliable data on key elevated temperature properties and long-term behaviour. This lecture will discuss the nature of these challenges by reviewing key developments in materials and device design and construction. It will draw on several case studies which encompass magnetic and electrical material characterisation; the development of modelling techniques; and the design, construction and testing of prototype devices.

PROGRAMME

Chairman: Stuart Eaton, QinetiQ Limited

from 1500 REGISTRATION/COFFEE

1530 WELCOME/INTRODUCTION

1540 **Permanent Magnets for High Temperature Applications**, Dr Andy Williams, Dept of Metallurgy and Materials, University of Birmingham

1610 **High Temperature Wires and Insulation**, Professor Simon Hodgson, School of Science and Technology, Teeside University

1640 **Soft Magnetic Cobalt-Iron Alloys at High Temperature**, Dr Witold Pieper, Vacuumschmelze GmbH & Co KG, Germany

1710 **SiC Based Electronics for High Temperature Applications**, Dr Alton Horsfall, School of Elec, Elec and Computer Engineering, University of Newcastle upon Tyne

1740 INTERVAL: TEA/COFFEE

1830 **23rd EWING LECTURE: High Temperature Electromagnetic Devices**, Professor Geraint Jewell, Dept of Elec and Elec Engineering, University of Sheffield

2000 **DENNIS HADFIELD MEMORIAL PRIZE AWARD** (Best Student Bursary Conference Report in 2009 Magnews)

2015 BUFFET SUPPER

2200 END

PLEASE COMPLETE AND RETURN TO:

Jane Ward, UK Magnetics Society, Grove Business Centre, Grove Technology Park, Wantage, Oxon OX12 9FA
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I wish to attend the UK Magnetics Society 23rd Ewing Event: *High Temperature Electromagnetic Devices* and *High Temperature Magnetic Materials and Components*, to be held on Wednesday, 3 December 2008, at Oriel College, University of Oxford, and enclose remittance to cover technical sessions, seminar documentation, refreshments and buffet supper (cheques made payable to the **UK Magnetics Society** and drawn on a UK bank).

Payment may also be made by bank transfer: UK Magnetics Society, Barclays Bank plc, 17 Market Place, Wantage, Oxon OX12 8AG, UK, Acct No 50893293, Sort Code No: 20-90-91, IBAN:GB98 BARC 2090 9150 8932 93, SWIFTBIC: BARCGB22. **Please add £10 to cover bank charges if paying by bank transfer from overseas.**

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<input type="checkbox"/> Non-members	£161.00	£24.15	£185.15
<input type="checkbox"/> Non-member students	£ 69.00	£10.35	£ 79.35
<input type="checkbox"/> I wish to make a poster presentation			

PLEASE REGISTER BY 23 NOVEMBER 2009 IF POSSIBLE

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The UK Magnetics Society accepts no responsibility or liability in any way whatsoever for any statements made or opinions expressed during this event