

# UK Magnetics Society

Tuesday, 6 December 2005

at The Institute of Materials, Minerals and Mining, London

**Flux, Wires and Videotape**  
covering diverse aspects of magnetic material manipulation

Chairman: Dr Alex Michaelides, Vector Fields Ltd

1430 REGISTRATION/TEA

1500 **Nanoscale Engineering in Magnetic Recording**  
Prof Aric Menon, Technical University of Denmark,  
Mikroelektronik Centret

1530 **Amorphous and Nanocrystalline Magnetic Microwires**  
Dr Firutza Borza, Wolfson Centre for Magnetics  
Technology, Cardiff University

1730 **19th Ewing Lecture:**

**Non-Linear Behaviour in Magnetic Materials**

Guest Speaker: Professor David Jiles, Wolfson Centre for Magnetics, Cardiff University

When magnetic materials are exposed to high levels of external magnetic field the change in magnetisation extends beyond the simple linear regime. Under these conditions it is found that the response of the materials is no longer reversible. This phenomenon, known as hysteresis, was first observed by Ewing and he coined the term. Hysteresis effects are well documented in the experimental literature and properties such as magnetic coercivity can range from less than 1 A/m in soft materials to 1,000,000 A/m in hard materials. Description of the non-linear response of hysteresis is a topic at the leading edge of research with important technological applications. The complexity of the problem arises because many different factors compete to determine the overall response. Therefore the understanding of hysteresis is only at an early stage of development compared with the understanding of low amplitude, linear/reversible effects. In this lecture discussion will focus on the underlying concepts used to explain hysteresis in different materials. In general all of these descriptions are approximations to complicated systems with many different and competing interactions on length scales ranging from the atomistic ( $10^{-9}$  m) to the macroscopic continuum ( $10^{-2}$  m). Therefore depending on the relative importance of the interactions, and the length scale of interest, different models are appropriate to different situations.

David Jiles was until recently Anson Marston Distinguished Professor at Iowa State University and Senior Physicist with Ames Laboratory, US Department of Energy. He is now Director of the Wolfson Centre for Magnetics at Cardiff University

1900 BUFFET SUPPER  
2030 END

1600 **Magnetic Domain Walls - From Bulk to the Nanoscale**

Dr Del Atkinson, University of Durham, Dept of Physics

1630 **Electronics in a Spin?**

Dr Sarah Thompson, University of York, Dept of Physics

1700 TEA

PLEASE COMPLETE AND RETURN TO:

Margaret Swadling, The UK Magnetics Society  
Grove Business Centre, Grove Technology Park  
Wantage, Oxon OX12 9FA

tel: +44 (0)1235 770652 fax: +44 (0)1235 772295

email: mswadling@ukmagsoc.co.uk

I wish to attend The UK Magnetics Society afternoon seminar *Flux, Wires and Videotape* and the 19th Ewing Lecture *Non-Linear Behaviour in Magnetic Materials*, to be held on Tuesday 6 December 2005, at The Institute of Materials, Minerals and Mining, London, 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: The UK Magnetics Society, Barclays Bank plc, 17 Market Place, Wantage, Oxon OX12 8AG, UK, Account No 50893293, Sort Code No: 20-90-91; **please add on £10 to cover bank charges if paying by bank transfer from overseas.**

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Margaret Swadling  
The UK Magnetics Society  
Grove Business Centre  
Grove Technology Park  
Wantage  
Oxon OX12 9FA  
tel: +44 (0)1235 770652  
fax: +44 (0)1235 772295  
email: mswadling@ukmagsoc.co.uk  
www.ukmagsoc.org

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**UK Magnetics  
Society**

Afternoon Seminar:  
*Flux, Wires and Videotape*  
and  
19th Ewing Lecture:  
*Non-Linear Behaviour in  
Magnetic Materials*  
Tuesday, 6 December 2005  
at  
The Institute of Materials,  
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