Professor John Stuart Abell BSc, PhD, DSc, C Phys, FInstP

Professor of Functional Materials

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About

Stuart Abell is Professor of Functional Materials. He has published over 380 papers in scientific journals as well as reviews and book chapters in the fields of magnetic materials, crystal growth and high temperature superconducting materials and thin film transparent conducting materials for flat panel display applications.

He has received major grants from EPSRC, TSB, EU and various industrial grants. He has given many invited talks to International conferences and been a member of organising committees for many of these.

Qualifications

DSc in Materials, Birmingham University, 1994

Fellow of the Institute of Physics, 1994

PhD, Solid State Physics,University of Surrey, 1970

BSc, Physics, University of Reading, 1966

Biography

Stuart Abell qualified with a BSc (Hons) in Physics from Reading University in 1966. He went on to study for a PhD at the University of Surrey in 1970. After a short period in the USA at The University of Chicago and Argonne National Lab. Stuart joined The Metallurgy and Materials Department at Birmingham, initially as a postdoc and subsequently as Lecturer, Senior Lecturer, Reader and Professor. He was made a Fellow of the Institute of Phyusics in 1994 and also awarded a DSc in 1994. He is head of the Functional Materials research group in the School.

Research

RESEARCH THEMES

- Thin film transparent conducting oxides for flat panel display applications.
- Artificial pinning centres for improved current density in thin film superconductors
- Crystal Growth and Magnetic properties of functional oxides.
- Materials science of high temperature superconducting bulk, thick films and crystals.
- Crystal growth and characterisation of magnetic intermetallic compounds

RESEARCH ACTIVITY

Recent Research Grants :

EPSRC (EP/F007698 Preparation, refining, crystal growth and supply of specimens for metal physics research 2007-2010.

TSB : SOLFLEX Low temperature sol-gel deposition of novel conductors on flexible plastic substrates 2007-2010

EU Marie Curie Excellence Grant : Nanotech Pinning in HTS 2007 – 2011

EPSRC Portfolio award Co-investigator : Correlated structural and microwave diagnostics of HTS films 2003-2008

EC Framework Programme 6 : HIPERMAG : MgB2 composite conductors and thin films for cryogen-free devices 2004-200

Other activities

- EPSRC Functional Materials College
- EC INTAS Evaluator
- Organising Committee for European Applied Superconductivity Conference, Brussels 2007
- Invited Plenary for International Congress in Materials Science and Engineering, Algeria 2006
- Organising Committee for International Conference ‘Spectroscopies of Novel Superconductors, Spain, July 2004
- Organising Committee for International Conference : Applied Superconductivity Conference, Houston, August 2002.

- Organising Committee : Applied Superconductivity Conference, Virginia, Sept. 2000.
- Non-Executive Director of Newlands Scientific Research Ltd.
- Birmingham representative on SCENET-2, an EU network on superconductivity
- Federation of European Materials Societies representative on the organising committee of a Symposium at the 125th Annual Meeting of TMS in Anaheim in 1996.
- Director, National Crystal Growth Facility for Superconducting Oxides (1989-2000

Publications

Critical current density and pinning potential in YBCO thick films ablated froma BZO-doped nano-crystalline target. A Crisan, MM Awang Kechik, P. Mikheenko, VS Dang, A Sarkar, JS Abell, P. Paturi, H Huhtinen. Supercond, Sc. Techn. 22 (2009) 045014

Pulsed laser deposition of indium tin oxide films on flexible polyethylene napthalate display substrates at room temperature. K. Sierros, JS Abell, SN Kukureka. Thin Solid Films 518 (2010) 2623-2627

Microstructure-property relationships in thin film ITO. G Giusti, L Tian, IP Jones, JS Abell, J Bowen. Thin Solid Films 518 (2009) 1140-1144

Improvement of pinning force and critical current density in thick YBCO films grown on STO substrates decorated with LNO nano-dots. A Crisan, A Sarkar, P Mikheenko, VS Dang, MM Awang Kechik, JS Abell J Supercon. Nov. Magn. 22 (2009) 631-636

Pinning potential in thick PrBCO/YBCO quasi-multilayers. A Crisan, VS Dang, P Mikheenko, YY Tse, A Sarkar, J Bowen, JS Abell. Physica C 470 (2010) 55-60

c-axis correlated extended defects and critical current in YBa_{2}Cu_{3}O_{x} films grown on Au and Ag-nanodot decorated substrates. P Mikheenko, A Sarkar, V-S Dang, J L Tanner, J S Abell and A Crisan. Physica C 469 (2009) 798-804

YBCO thin films by citrate-based non-fluorine precursor. W Cui, P Mikheenko, LM Yu, TW Button, JS Abell, A Crisan. J Supercond. and Novel Magn. 22 (2009) 811-815

Integrated nanotechnology of pinning centres in YBCO films. P. Mikheenko, V-S Dang, Y.Y. Tse, M.M. Awang Kechik, P. Paturi, H Huhtinen, JS Abell, A Crisan. SUST 23 (2010) 125007

Chapter in Handbook on the Physics and Chemmistry of Rare Earths

Preparation and Crystal Growth of Rare Earth Elements and Intermetallic Compounds. J.S. Abell. Handbook on the Physics and Chemistry of Rare Earths, Vol. 12, eds. K.A. Gschneidner and L. Eyring (North Holland, Amsterdam) 1-51, 1989.

Chapter in Superconducting Glass-Ceramics in BSCCO : Fabrication and Application, Preparation of superconducting BSCCO by radiative and novel electrical resistance heat treatment of melt cast precursor rods. J.S. Abell and J.R. Bhakta, World Scientific (1998) p 95-124.

Chapter in "Grain Boundaries", Grain boundary problems in textured superconducting oxides. J.S. Abell, Inst. of Materials, 2000, p 305-319

Chapter in Handbook of Superconducting Materials Bulk Materials Firing Techniques. J.S. Abell and T.W Button, IOP Publishing, 1999