

Theme 5 Outputs

Publications:

1. Kemmitt, T., Al-Salim, N.I., Gainsford, G.J., Bubendorfer, A. and Waterland, M., Unprecedented oxo-titanium citrate complex precipitated from aqueous citrate solutions, exhibiting a novel bilayered Ti_8O_{10} structural core, *Inorganic Chemistry*, **43**, 6300-6306, 2004.
2. Kemmitt, T., Gainsford, G.J. and Al-Salim, N.I., An oxo-bridged centrosymmetric tetranuclear titanium compound, *Acta Crystallographica*, **C60**, m42-m43, 2004.
3. Le Ru, E.C. and Etchegoin, P.G., Sub-wavelength localization of hot-spots in SERS, *Chemical Physical Letters*, **396**, 393, 2004.
4. Liem, H., Cabanillas-Gonzalez, J., Etchegoin, P.G. and Bradley, D.D.C., Glass transition temperatures of polymer thin films monitored by Raman scattering, *J. Phys.: Condens. Matter*, **16**, 721, 2004.
5. Maher, R.C., Cohen, L.F., Etchegoin, P.G., Hartigan, H., Brown, R. and Milton, M., Stokes/anti-Stokes anomalies under surface enhanced Raman scattering conditions, *J. Chem. Phys.*, **120**, 11746, 2004.
6. Maher, R.C., Dalley, M., Le Ru, E.C., Cohen, L.F., Etchegoin, P.G., Hartigan, H., Brown, R.J.C. and Milton, M.J.T., Physics of single molecule fluctuations in SERS active liquids, *J. Chem. Phys.*, **121**, 8901, 2004.
7. Johnston, J.H., Mcfarlane, A.J., Borrmann, T. and Moraes, J., Nano-structured silica and silicates: new materials and their applications in paper, *Current Applied Physics*, **4**, 411-414, 2004.
8. Borrmann, T., Edgar, K., Macfarlane, A.J., Spencer, J.L. and Johnston, J.H., Calcium silicate-carbon nanotube composites, *Current Applied Physics*, **4**, 359-361, 2004.
9. Southam, D.C., Lewis, T.W., Mcfarlane, A.J. and Johnston J.H., Amorphous calcium silicate as a chemisorbent for phosphate, *Current Applied Physics*, **4**, 355-358, 2004.
10. MacKenzie, K.J.D., Solid state multinuclear NMR: a versatile tool for studying the reactivity of solid systems, *Solid State Ionics*, **172**, 383-88, 2004.
11. MacKenzie, K.J.D., Spectroscopy of mullite and compounds with mullite-related structures, *Mullite Ceramics and Composites*, Ed. H. Schneider and S. Komarneni, Wiley-VCH, Weinheim, 192-227, 2005.

Conference Papers:

1. Liu, X., Spencer, J.L., Kaiser, A.B. and Arnold, W.M., Electric-field oriented carbon nanotubes in different dielectric solvents, *Current Applied Physics*, **4(2-4)**, 125-128, 2004.
2. Liu, X., Spencer, J.L., Kaiser, A.B. and Arnold, W.M., Manipulation and purification of multi-walled carbon nanotubes, *Annual Report Conference on Electrical Insulation and Dielectric Phenomena (CEIDP 2004)*, 336-339 (ISBN -7803-8584-5), 2004.

3. Lee, R.S., Arnold, W.M. and Pethig, R., Control of cell elution from a dielectrophoresis micro-array using a permittivity gradient, *Annual Report Conference on Electrical Insulation and Dielectric Phenomena (CEIDP 2004)*, 352-356, (ISBN -7803-8584-5), 2004

Conference Presentations:

1. Chong, S.V., Ingham, B.I. and Tallon, J.L., Two synthetic routes to the formation of W-oxide hybrids, *MRS Fall meeting*, November 29 – December 3, 2004.
2. Ingham, B.I., Chong, S.V. and Tallon, J.L., Layered tungsten oxide-based hybrid materials incorporating transition metal ions, *MRS Fall meeting*, November 29 – December 3, 2004.
3. Johnston, J.H., Moraes, J. and Borrmann, T., Conducting polymers on paper fibres, *International Conference on Synthetic Metals ICSM04*, Wollongong, June, 2004 (Poster).
4. Borrmann, T., Mcfarlane, A.J. and Johnston, J.H., Photoactivity of calcium silicate, *International Conference on Synthetic Metals ICSM04*, Wollongong, June, 2004 (Poster).
5. Richardson, M.J., Johnston, J.H., Borrmann, T. and Wiseman, N., Conducting polymer-wood composites retain properties of both materials, *International Conference on Synthetic Metals ICSM04*, Wollongong, June, 2004 (Poster).
6. Ian Brown was an invited presenter and panellist at an International Conference on the Renewable Hydrogen Economy in Manila, Philippines from 6-10 December 2004. This was fully funded via the Environmental Exchange Division of the US Institute of International Education. Three oral papers delivered “Hydrogen Research in New Zealand”, “Overview of Geothermal Resources in New Zealand”, “Overview of Bioenergy resources in New Zealand”.
7. Liu, X., Spencer, J.L., Kaiser, A.B. and Arnold, W.M., Manipulation and purification of multi-walled carbon nanotubes, *IEEE/DEIS Conference on Electrical Insulation and Dielectric Phenomena*, Boulder CO, October 17-21, 2004 (oral).
8. Lee, R.S., Arnold, W.M. and Pethig, R., Control of cell elution from a dielectrophoresis micro-array using a permittivity gradient, *IEEE/DEIS Conference on Electrical Insulation and Dielectric Phenomena*, Boulder CO, October 17-21, 2004 (poster).
9. MacKenzie, K.J.D., Okada, K., Jha, V.K., Kameshima, Y. and Nakajima, A., Sorption properties of activated carbon prepared from old paper and amorphous $2\text{CaO}\cdot\text{Al}_2\text{O}_3\cdot 2\text{SiO}_2$ from paper ash sludge, 2nd. *Int. Conf. on Waste Management and the Environment*, Rhodes, September 29-October 1, 2004 (poster).
10. MacKenzie, K.J.D. and Van Barneveld. D., Mechanochemical activation of precursors for synthesis of β -sialon. (Member of the International Advisory Board for this conference and Session Chairman), *International Conference on Smart Materials Smart Mat-2004*, Chiang Mai, Thailand, December 1-3, 2004 (poster).

11. MacKenzie, K.J.D., Barrel, J. and Stysenko, E., Pyroelectric properties of Bi₃TiNbO₉-based ceramics at high temperatures. *International Conference on Smart Materials (SmartMat-04)*, Chiang Mai, Thailand, December 1-3, 2004 (poster).
12. MacKenzie, K.J.D., Advances in understanding the synthesis mechanism and properties of geopolymeric materials, Invited Keynote Paper, *43rd Symposium on the Basic Science of Ceramics, Hybridised Nanotechnology Symposium*, Chiba, Japan, January 20-21, 2005 (oral).

Invited Talks:

1. Arnold, M., Electrical measurement and manipulation of carbon nanotubes, *University of Calgary, Dept. of Electrical and Computer Engineering*, November 3, 2004.
2. Brown, I., New materials for the Hydrogen Economy, *NZ Institute of Physics*, August 12, 2004.
3. Tilley, R., University of Canterbury Department of physics, September 17, 2004.
4. Tilley, R., Clinical School of Canterbury Health Laboratories, December 10, 2004.

Industry Reports:

1. Brown, I., Two confidential reports and presentations delivered to industry clients, 2004.

Talks or Interactions with Community Groups or Schools:

1. Brown, I., Judge at Wellington Science Fair, August, 2004.
2. Brown, I., Projects and Project Management at IRL, Wellington branch of Project Management International (PMI) group, National Library Bldg., September 20, 2004.
1. Tilley, R., Presentation on Quantum dots for the chemistry teachers day, September 17, 2004.

Visitors:

2. Prof R. Sims, Massey University, August, 2004 (hosted by Dr Ian Brown).
3. Dr G. Yuan, Landcare Ltd., August, 2004 (hosted by Dr Ian Brown).
4. Assoc Prof D. Zhang, Waikato University, November, 2004 (hosted by Dr Ian Brown).
3. Dr Kabayashi from NEDO Japan, Nov 15-20, 2004 (hosted by Dr Richard Tilley).

