

Theme 2 Outputs:

1. Publications:

1. A. Awasthi, S.C. Hendy, P. Zoontjens, S.A. Brown, and F. Natali, Reflection and adhesion behavior in nanocluster deposition by molecular dynamics simulations, *Physical Review B*, **76**, 115437, (2007)
2. A. Koo, F. Budde, B.J. Ruck, H.J. Trodahl, A. Bittar, and A. Preston, Spatial dependence of photoconductivity in nanocrystalline GaN and amorphous GaON, *Journal of Materials Science: Materials in Electronics*, **18**, S107, (2007)
3. A.B. Kaiser, V. Skákalová, and S. Roth, Modelling conduction in carbon nanotube networks with different thickness, chemical treatment and irradiation, *Physica E: Low-Dimensional Systems and Nanostructures*, 1-8, (2007)
4. A.B. Kaiser, V. Skákalová, and S. Roth, Thin transparent carbon nanotube networks: effects of ion irradiation, *Physica Status Solidi (b)*, **244**, 4199-4203, (2007)
5. A.R.H. Preston, S. Granville, D.H. Housden, B. Ludbrook, B.J. Ruck, H.J. Trodahl, A. Bittar, G.V.M. Williams, J.E. Downes, K.E. Smith, Y. Zhang, A. DeMasi, and W.R.L. Lambrecht, Comparison between experiment and calculated band structures for DyN and SmN, *Phys. Rev. B*, **76**, 245120, (2007)
6. B. Ingham, S.C. Hendy, N.J. Laycock, and M.P. Ryan, Estimates of the thermodynamic stability of the iron-chromium spinels in aqueous solution based on first principles calculations, *Electrochemical and Solid State Letters*, **10**, C57-C59, (2007)
7. C. Dotzler, G.V.M. Williams, A. Edgar, and G.A. Appleby, Dosimetric Properties of RbCdF₃:Mn²⁺, *Radiation Measurements*, **42**, 586, (2007)
8. C. Dotzler, G.V.M. Williams, and A. Edgar, RbCdF₃:Mn²⁺: A Potential UV Dosimeter Material, *Applied Physics Letters*, **91**(18), 181909, (2007)
9. C. Dotzler, G.V.M. Williams, U. Rieser, and A. Edgar, Optically stimulated luminescence of NaMgF₃:Eu²⁺, *Appl. Phys. Lett.*, **92**, 121910, (2007)
10. C.E.A. Grigorescu, E. Valerio, O. Monnereau, L. Tortet, L. Argeme, G. Pavelescu, S.A. Manea, C. Ducu, A. Malinovski, H.J. Trodahl, A. Bittar, N. Strickland, R. Notonier, W.R. Branford, and M. Autric, Pulsed Laser Deposition of Co-based Tailored-Heusler Alloys, *Applied Surface Science*, **253**, 8102, (2007)
11. C.J. Dotzler, G.V.M. Williams, and A. Edgar, Thermoluminescence, photoluminescence and optically stimulated luminescence properties of x-ray irradiated RbMgF₃:Mn²⁺, *Phys. Stat. Sol. C*, **4**, 992, (2007)
12. C.J. Dotzler, G.V.M. Williams, U. Reiser, and A. Edgar, Optically stimulated luminescence in NaMgF₃:Eu²⁺, *Applied Physics Letters*, **91**, 121910, (2007)
13. Chia-Jyi Liu, Pradipta K. Nayak, and G.V.M. Williams, Magnetothermopower and Magnetoresistivity of RuSr₂Gd_{2-x}Ce_xCu₂O_{10+δ} (x=0.6,1.0), *Appl. Phys. Lett.*, **91**, 123110, (2007)
14. D. Csontos, and U. Zülicke, Large variations in the hole spin splitting of quantum-wire subband edges, *Physical Review B*, **76**, 73313, (2007)
15. D. Schebarchov, and S.C. Hendy, Thermal instability of non-crystalline structures in platinum clusters, *European Physical Journal D*, **43**, 11-14, (2007)
16. D.J. Pringle, H. Eicken, H.J. Trodahl, and L.G.E. Backstrom, Thermal conductivity of landfast Antarctic and Arctic sea ice, *J. Geophys. Res.*, **112**, C04017, (2007)
17. E.K. Hemery, G.V.M. Williams, and H.J. Trodahl, Anomalous Thermoelectric Power in SrFeO_{3-δ}: Evidence for Charge-ordering, *Phys. Rev. B*, **75**, 9403, (2007)

18. E.K. Hemery, G.V.M. Williams, and H.J. Trodahl, Isoelectronic and electronic doping in Sr₂FeMoO₆, *J. Magnetism and Magnetic Materials*, **310**, 1958, (2007)
19. E.K. Hemery, G.V.M. Williams, and H.J. Trodahl, The effect of isoelectronic substitution on the magneto-resistance of Sr_{2-x}BaxFeMoO₆, *Physica B*, **390**, 175, (2007)
20. E.K. Hemery, G.V.M. Williams, and H.J. Trodahl, The effects of Al substitution on the magnetic and electronic properties of Sr₂Fe_{1-x}Al_xMoO₆, *Physica B*, **394**, 74, (2007)
21. G.R. Willmott, and J.L. Tallon, Analysis of slip of a Newtonian fluid applied to a torsional ultrasonic, *Phys. Rev. E*, **76**, 66306, (2007)
22. G.V.M. Williams and J. Haase, Doping-Dependent Reduction of the Cu Nuclear Magnetic Resonance Intensity in the Electron-Doped Superconductor Pr_{2-x}CexCuO₄, *Phys. Rev. B*, **75**, 172506, (2007)
23. G.V.M. Williams, A. Bittar, C. Dotzler, A. Beaudin, C. Varoy, and C. Dunford, Glass-Ceramics and Epoxy-Composites for Radiation Imaging, *Radiation Measurements*, **42**, 899, (2007)
24. G.V.M. Williams, C. Dotzler, A. Edgar, and S.G. Raymond, Ultra-violet induced absorption and Bragg grating inscription in RbCdF₃:Mn²⁺, *J. Appl. Phys.*, **102**, 113106, (2007)
25. G.V.M. Williams, Cu Nuclear Quadrupole Resonance Study of Substituently Induced Disorder in Underdoped Y_{1-x}CaxBa_{2-x}LaxCu₄O₈, *Phys. Rev. B*, **76**, 94502, (2007)
26. G.V.M. Williams, The Effect of Pb on the Low Frequency Raman Modes in Bi_{2-x}PbxSr₂CaCu₂O_{8+d} and Bi_{2-x}PbxSr₂Ca₂Cu₃O_{10+d} Superconductors, *Appl. Phys. Lett.*, **91**, 12509, (2007)
27. H.J. Trodahl, A.R.H. Preston, J. Zhong, B.J. Ruck, N.M. Strickland, C. Mitra, and W.R.L. Lambrecht, Ferromagnetic red shift of the optical gap in GdN, *Phys. Rev. B*, **76**, 85211, (2007)
28. J. Kennedy, A. Markwitz, H.J. Trodahl, B.J. Ruck, S.M. Durbin, and W. Gao, Ion Beam Analysis of amorphous and Nanocrystalline Group iii-V and ZnO thin films, *Journal of Electronic Materials*, **36**, 472 - 482, (2007)
29. J. Quilty, J. Robinson, G.A. Appleby, and A. Edgar, Thermoluminescence Apparatus Using PT100 Resistors as the Heating and Sensing Elements, *Review of Scientific Instruments*, **78**(83905), 083901-083906, (2007)
30. J. Wang, C.S. Sandu, E. Colla, Y. Wang, W. Ma, R. Gysel, H.J. Trodahl, N. Setter, and M. Kuball, Ferroelectric domains and piezoelectricity in monocrystalline Pb(Zr,Ti)O₃ nanowires, *Appl. Phys. Lett.*, **90**, 133107, (2007)
31. J.G. Storey, J.L. Tallon, and G.V.M. Williams, Saddle-point van Hove singularity and the phase diagram of high-T_c cuprates, *Phys. Rev. B*, **76**, 174522, (2007)
32. J.G. Storey, J.L. Tallon, G.V.M. Williams, and J.W. Loram, Fermi Arcs in Cuprate Superconductors: Tracking the Pseudogap below T_c and above T*, *Phys. Rev. B Rapid Communications*, **76**, 060502R, (2007)
33. J.W. Lynn, Y. Chen, Q. Huang, S.K. Goh, and G.V.M. Williams, Search for Magnetic Order in Superconducting RuSr₂Eu_{1.2}Ce_{0.8}Cu₂O₁₀, *Phys. Rev. B*, **76**, 14519, (2007)
34. L. Capogna, Y. Sidis, B. Fauqué, C. Ulrich, P. Bourges, S. Pailhès, A. Ivanov, J.L. Tallon, B. Liang, C.T. Lin, and B. Keimer, Odd and even magnetic resonant modes in highly overdoped Bi₂Sr₂CaCu₂O_{8+d}, *Phys. Rev. B*, **75**, 60502, (2007)
35. M. Požek, A. Dulčić, A. Hamzić, M. Basletić, E. Tafra, G.V.M. Williams, and S. Krämer, Magnetotransport of lanthanum doped RuSr₂GdCu₂O₈ - the role of gadolinium, *Eur. Phys. J. B*, **57**, 1, (2007)

36. M. Rudolphi, A. Markwitz, and H. Baumann, Surface cavities produced by high dose nitrogen ion implantation into silicon, *Surface and Interface Analysis*, **39**, 698-701, (2007)
37. N. Klein, E. Hollenstein, D. Damjanovic, H.J. Trodahl, N. Setter, and M. Kuball, Phase diagram of (K,Na,Li)NbO₃ determined by dielectric and piezoelectric measurements and Raman spectroscopy, *J. Appl. Phys.*, **102**, 14112, (2007)
38. N. Suresh, J.L. Tallon, and Thermodynamic properties of Pb determined from pressure-dependent critical-field measurements, *Phys. Rev. B*, **75**, 174502, (2007)
39. P. Zoontjens, T.P. Schulze, and S.C. Hendy, A hybrid kinetic Monte Carlo-Molecular Dynamics method for modeling epitaxial growth, *Physical Review B*, **76**, 245418, (2007)
40. R. Winkler, U. Zülicke, and J. Bolte, Oscillatory multiband dynamics of free particles: The ubiquity of zitterbewegung effects, *Physical Review B*, **75**, 205314, (2007)
41. R.P. Taylor, R. Guzman, T.M. Martin, G. Hall, A.P. Micolich, D. Jonas, B.C. Scannell, M.S. Fairbanks, and C.A Marlow, Authenticating Pollock Paintings with Fractal Geometry, *Pattern Recognition Letters*, **28**, 695, (2007)
42. S. Johnson, U. Zülicke, and A. Markwitz, Universal characteristics of resonant-tunneling field emission from nanostructured surfaces, *Journal of Applied Physics*, **101**, 123712, (2007)
43. S.C. Hendy, A thermodynamic model for the melting of supported metal nanoparticles, *Nanotechnology*, **18**, 175703, (2007)
44. S.C. Hendy, and N.J. Lund, Effective slip boundary conditions for flows over nanoscale chemical heterogeneities, *Physical Review E*, **76**, 66313, (2007)
45. U. Zülicke, and A. I. Signal, Rashba interferometers: Spin-dependent single and two-electron interference, *Solid State Communications*, **144**, 529, (2007)
46. U. Zülicke, J. Bolte, and R. Winkler, Magnetic focusing of charge carriers from spin-split bands: Semiclassics of a Zitterbewegung effect, *New Journal of Physics*, **9**, 355, (2007)

2. Published conference papers:

1. D. Carder, A. Markwitz, and H. Baumann, Ion-beam sputtered germanium thin films? Self-assembly of surface nanostructure using post growth annealing, *Refereed proceeding of 15th AINSE Conference on Nuclear and complementary Techniques of Analysis*, The University of Melbourne, Australia, The University of Melbourne, Australia, (2007)
2. R. Danneau, O. Klochan, W.R. Clarke, L.H. Ho, A.P. Micolich, M.Y. Simmons, A.R. Hamilton, M. Pepper, D.A. Ritchie, and U. Zülicke, Anisotropic Zeeman splitting in ballistic one-dimensional hole systems, *AIP Conference Proceedings*, **893**, 699, (2007)
3. C. Dotzler, G.V.M. Williams, U. Rieser, and A. Edgar, Impurity-doped Fluoroperovskites for Ionizing Radiation and Solar UV, *Proceedings of the International Conference on Materials for Advanced Technologies*, Singapore, Singapore, (2007)
4. C. Dotzler, G.V.M. Williams, and A. Edgar, TSL,PL and optical properties of X - Irradiated RbMgF₃:Mn²⁺, *Phys. stat.sol. C*, **4**, 992-995, (2007)
5. A. Edgar, The core-shell particle model for light scattering in glass-ceramics: Mie scattering analysis and discrete dipole simulations, *Journal of Materials Science: Materials in Electronics*, **18**, S335-S338, (2007)
6. B. Ingham, B.N. Illy, J.R. Mackay, S.P. White, S.C. Hendy, and M.P. Ryan, In Situ Synchrotron X-ray Absorption Experiments and Modelling of Growth Rates

of Electrochemically Deposited ZnO Nanostructures, *Mater. Res. Soc. Symp. Proc.*, (2007)

7. J. Kennedy, A. Markwitz, H.J. Trodahl, B.J. Ruck, S.M. Durbin, and W. Gao, Ion beam analysis of amorphous and nanocrystalline group III-V nitride and ZnO thin films, *J. Electron. Mater.*, **36** (4), 472, (2007)
8. A. Koo, F. Budde, B.J. Ruck, H.J. Trodahl, A. Bittar, and A.R.H. Preston, Photocurrent diffusion length in disordered GaN, *J. Mater. Sci. – Mater. Electron.*, **18**, S107, (2007)

3. Conference presentations:

1. G.A. Appleby, A. Edgar, G.V.M. Williams, J. Robinson, and P. Vontobel, Optimisation of lithium borate glass ceramics for thermal neutron imaging plates, *3rd International Conference on Advanced Materials and Nanotechnology (AMN-3)*, Wellington, New Zealand, (Feb-2007)
2. A. Bittar, G.V.M. Williams, N. Strickland, C. Grigorescu, E. Valerio, M. Autric, J. Von Bardeleben, H.J. Trodahl, B. Ruck, and S. Granville, Bulk and interface disorder in Co₂MnSi Heusler thin films on lattice matched substrates, *3rd International Conference on Advanced Materials and Nanotechnology (AMN-3)*, Wellington, New Zealand, (Feb-2007)
3. C. Dotzler, G.V.M. Williams, and A. Edgar, Dosimetry Properties of NaMgF₃ Doped with Mn²⁺ and Eu²⁺, *15th international conference on solid state dosimetry*, Delft, (Jul-2007)
4. C. Dotzler, G.V.M. Williams, and A. Edgar, Impurity-doped Fluoroperovskites for Ionizing Radiation and Solar UV Dosimetry, *International Conference on Materials for Advanced Technologies*, Singapore, (Jul-2007)
5. C. Dotzler, G.V.M. Williams, and A. Edgar, Radiation-Induced Optically and Thermally Stimulated Luminescence in RbCdF₃ and RbMgF₃, *3rd International Conference on Advanced Materials and Nanotechnology (AMN-3)*, Wellington, New Zealand, (Feb-2007)
6. A. Edgar, M. Bartle, S.G. Raymond, G.V.M Williams, and C. Varoy, Structural and scintillation properties of cerium-doped Ba₂LaF₇ and Ba₂LaCl₇, *IEEE-9th International Conference on Inorganic Scintillators and their Applications*, Winston-Salem, NC, USA, (Jun-2007)
7. J.D. Graham, G.V.M. Williams, and E.K. Hemery, Thick Films of Double Perovskites, *International Workshop on Semiconductor/Spintronic Nanoscience*, Wellington, New Zealand, (Feb-2007)
8. J. Haase, C.P. Slichter, and G.V.M. Williams, Proof of two-component behavior in cuprate superconductivity, *3rd International Conference on Advanced Materials and Nanotechnology (AMN-3)*, Wellington, New Zealand, (Feb-2007)
9. J. Haase, C.P. Slichter, and G.V.M. Williams, Two Fluids in High-Temperature Superconductivity from NMR, *International Conference on Modern Development of Magnetic Resonance*, Kazan, (Sep-2007)
10. E. Hemery, G.V.M. Williams, and H.J. Trodahl, Anomalous Thermoelectric Power in SrFeO_{3-δ} from Charge-Ordering and Phase Separation, *NZIP Conference*, Dunedin, (Jul-2007)
11. E. Hemery, G.V.M. Williams, and H.J. Trodahl, Magnetic and transport properties of Sr₂Fe_{1-x}Al_xMoO₆, *Material Research Society Spring Meeting 2007*, San Francisco, California, (Apr-2007)
12. E. Hemery, G.V.M. Williams, and H.J. Trodahl, Transport and magnetic properties of the metallic and spin-polarized Sr₂Fe_{1-x}Al_xMoO₆, *3rd International Conference on Advanced Materials and Nanotechnology (AMN-3)*, Wellington, New Zealand, (Feb-2007)

13. E.K. Hemery, G.V.M. Williams, and H.J. Trodahl, Half-metallic Sr₂FeMoO₆ Double Perovskites, *International Workshop on Semiconductor/Spintronic Nanoscience*, Wellington, New Zealand , (Feb-2007)
14. S.C. Hendy, A Hybrid Kinetic Monte Carlo - Molecular Dynamics Method for Modelling Epitaxial Growth, *ICIAM 07*, Zurich, Switzerland, (Jul-2007)
15. S.C. Hendy, Control of Micro and Nanofluidic Flows using Switchable Wettability, *AMN3 Satellite Meeting on Nano- & Bionano-Technology, Quantum Transport in Synthetic Metals and Quantum Functional Semiconductors (NBT-QT2007)*, Wellington, New Zealand , (Feb-2007)
16. S.C. Hendy, High performance computing in nanotechnology, *IEEE Workshop on High Performance Computing*, Auckland, (Jul-2007)
17. S.C. Hendy, The effect of chemical heterogeneity on flows of simple fluids, *Wellington-Manawatu Applied Mathematics Meeting*, New Zealand, (Aug-2007)
18. S.C. Hendy, The effect of roughness and chemical heterogeneity on flows in nanofluidic channels, *ANZIAM*, Perth, Australia , (Jan/Feb-2007)
19. S.C. Hendy, The effects of channel chemical heterogeneity and roughness on micro- and nanofluidic flows, *Workshop on control of micro and nanoscale flows*, Christchurch, (Apr-2007)
20. S.C. Hendy, Too small to melt: superheating and phase coexistence in metal nanoparticles, *3rd International Conference on Advanced Materials and Nanotechnology (AMN-3)*, Wellington, New Zealand , (Feb-2007)
21. S.C. Hendy, Why is stainless steel stainless?, *3rd International Conference on Advanced Materials and Nanotechnology (AMN-3)*, Wellington, New Zealand , (Feb-2007)
22. V. Kažukauskas, V. Kalendra, C.W. Bumby, B. Ludbrook, and A.B. Kaiser, Electrical Conductivity of Carbon Nanotubes and Polystyrene Composites, *34th International Symposium on Compound Semiconductors* , Kyoto, Japan, (Oct-2007)
23. C. Meyer, A.R.H. Preston, J. Zhong, B.J. Ruck, S. Granville, G.V.M. Williams, and H.J. Trodahl, Magnetic properties of rare earth nitrides thin films, *MRS Fall Meeting*, Boston, USA, (Nov-2007)
24. S. Ravi, C.W. Bumby, and A.B. Kaiser, Electronic properties of transparent conducting carbon nanotube films, *MacDiarmid Institute Student and Postdoc Symposium 2007*, Massey University, (Nov-2007)
25. S.G. Raymond, M. Bartle, G.A. Appleby, A. Edgar, and G.V.M. Williams, Scintillator glasses and glass-ceramics for neutron and gamma imaging, *3rd International Conference on Advanced Materials and Nanotechnology (AMN-3)*, Wellington, New Zealand , (Feb-2007)
26. B.J. Ruck, H.J. Trodahl, A. Preston, S. Granville, F. Budde, A. Bittar, G.V.M. Williams, J. Downes, K. Smith, and W. Lambrecht, Electronic and Optical Properties of Rare Earth Nitrides, *The International Conference on Optical, Optoelectronic and Photonic Materials and Applications (ICOOPMA2007)* , London, (Jul/Aug-2007)
27. B.J. Ruck, Electronic energy states in rare-earth nitrides: Challenges for theory and experiment, *AMN3 Satellite Meeting on Nano- & Bionano-Technology, Quantum Transport in Synthetic Metals and Quantum Functional Semiconductors (NBT-QT2007)*, Wellington, New Zealand , (Feb-2007)
28. B.J. Ruck, Electronic properties of rare-earth nitride thin films, *3rd International Conference on Advanced Materials and Nanotechnology (AMN-3)*, Wellington, New Zealand , (Feb-2007)
29. B.J. Ruck, The MacDiarmid Institute for Advanced Materials and Nanotechnology, *New Zealand Institute of Physics conference*, Dunedin , (Jul-2007)

30. B.J. Ruck, Theme II Research: The MacDiarmid Institute for Advanced Materials and Nanotechnology, *MacDiarmid Institute Student Symposium*, Palmerston North , (Dec-2007)
31. J. Storey, J.L. Tallon, and G.V.M. Williams, Thermodynamic properties of cuprate superconductors: Singularities and Pseudogaps, *March 2007 Meeting of the APS*, Denver, Colorado, (Mar-2007)
32. J. Storey, J.L. Tallon, and G.V.M. Williams, Transport and thermodynamic properties of cuprate superconductors: Singularities and Pseudogaps, *3rd International Conference on Advanced Materials and Nanotechnology (AMN-3)*, Wellington. New Zealand , (Feb-2007)
33. J. Storey, J.L. Tallon, and G.V.M. Williams, Transport and thermodynamic properties of high-Tc superconductors calculated from the energy-momentum dispersion, *NZIP Conference*, Dunedin, (Jul-2007)
34. J. Storey, J. Tallon, and G.V.M. Williams, Transport and Thermodynamic Properties of the High-Tc Cuprates, *Gordon Godfrey Workshop on Strong Electron Correlations*, University of New South Wales, Sydney, (Sep-2007)
35. J.L. Tallon, J. Storey, T. Fellmeth, and G.V.M. Williams, Van Hove singularity crossing in overdoped superconducting cuprates - effect on superconducting and normal-state properties, *March 2007 Meeting of the APS*, Denver, Colorado, (Mar-2007)
36. H.J. Trodahl, S. Granville, B.J. Ruck, A. Preston, A. Bittar, and G.V.M. Williams, Rare-Earth Nitride Films: Ion Assisted Growth, *March 2007 Meeting of the APS*, Denver, Colorado, (Mar-2007)
37. H.J. Trodahl, B.J. Ruck, S. Granville, A. Preston, A. Bittar, and G.V.M. Williams, Rare-Earth Nitrides: Film Growth and Electron Band Structure, *International Conference on Electroceramics*, Arusha, Tanzania, (Jul/Aug-2007)
38. R. White, G.V.M. Williams, S. Schweizer, B. Henke, and J.M. Spaeth, Optically Rewritable Diffraction Gratings in RbCdF₃:Mn²⁺ Crystals, *3rd International Conference on Advanced Materials and Nanotechnology (AMN-3)*, Wellington, New Zealand , (Feb-2007)
39. G.V.M. Williams, A. Edgar, and C. Dotzler and S. Raymond, Optically Rewritable Bragg Gratings in Mn²⁺ Doped RbCdF₃, *The International Conference on Optical, Optoelectronic and Photonic Materials and Applications (ICOOPMA2007)* , London, (Jul/Aug-2007)
40. U. Zülicke, Electronic and spin properties of hole point contacts, *3rd International Conference on Advanced Materials and Nanotechnology (AMN-3)*, Wellington. New Zealand , (Feb-2007)
41. U. Zülicke, Spin splitting in hole nanowires, *AMN3 Satellite Meeting on Nano- & Bionano-Technology, Quantum Transport in Synthetic Metals and Quantum Functional Semiconductors (NBT-QT2007)*, Wellington. New Zealand , (Feb-2007)

4. Invited talks:

Conference invitations

1. A.B. Kaiser, Changes in electronic transport in carbon nanotube networks with thickness and chemical treatment, *Euroconference on Electronic Properties of Novel Materials*, Kirchberg , (Mar-2007)
2. A.B. Kaiser, Changes in electronic transport in carbon nanotube networks with thickness, chemical treatment and irradiation, *Meeting of the European Materials Research Society* , Strasbourg , (May-2007)

3. B.J. Ruck and H.J. Trodahl, Electronic and optical properties of rare-earth nitride films, *International Conference on Optical, Optoelectronic and Photonic Materials and Applications*, London, (2007)
4. B.J. Ruck, Electronic and optical properties of rare-earth nitrides, *The International Conference on Optical, Optoelectronic and Photonic Materials and Applications*, London, UK , (Aug-2007)
5. R.P. Taylor, Fractal Environments, *1st International Conference on the SuperWave Principle*, Italy, (Oct-2007)
6. R.P. Taylor, Fractals across the disciplines, *Symposium on Scientists Sans Frontiers: Interfacial Tensions or Diminishing Boundaries?*, Massey University, Palmerston North, (Nov-2007)
7. R.P. Taylor, Nature's Fractal Patterns: an Inter-disciplinary Approach to Reducing People's Stress, *Keynote speaker, Australia, Technet Conference*, Brisbane, (Jul-2007)
8. R.P. Taylor, Quantum Conductance Fluctuations in Nano-scale Devices, *3rd International Conference on Advanced Materials and Nanotechnology*, Wellington, (Feb-2007)
9. R.P. Taylor, The Relationship between Science and Images, *12th Annual American Painting Conference*, New York, (May-2007)
10. H.J. Trodahl and B.J. Ruck, Rare-earth nitride films, Growth, structure electronic band structure, *3rd International Conference on Advanced Materials and Nanotechnology*, Wellington, (Feb-2007)
11. H.J. Trodahl, Rare-Earth Nitride Films, *International Conference on Electroceramics*, Arusha, (2007)
12. G.V.M. Williams and J. Haase, Nuclear Magnetic Resonance study of the High Temperature Superconducting Cuprates, *Gordon Godfrey Workshop on Strong Electron Correlations*, University of New South Wales, Sydney, (Sep-2007)
13. U. Zülicke, Andreev edge states: Recent results, new experiments and possible applications, *Final Colloquium of DFG Main Focus Programme Quantum Hall Systems*, Hannover, Germany , (Jun-2007)
14. U. Zülicke, Engineering of hole-spin polarisation in nanowires, *SPIE conference on Microelectronics, MEMS and Nanotechnology*, Canberra, Australia , (Dec-2007)
15. U. Zülicke, Nanospintronics meets relativistic quantum physics: Ubiquity of Zitterbewegung effects, *International conference on Trends in Nanotechnology* , San Sebastian, Spain , (Sep-2007)
16. U. Zülicke, Spin and pseudo-spin effects in quantum-confined systems, *Workshop on Mathematical and Computational Nanoscience* , Wellington, (Dec-2007)

Other invitations

1. A. Edgar, Optical Transparency and Scattering in Glass Ceramics, *7th PacRim Conference on Ceramics and Glass Technology*, Shanghai, (Nov-2007)
2. S.C. Hendy, The effects of channel chemical heterogeneity and roughness on micro- and nanofluidic flows, *Mechanical Engineering*, University of Canterbury, Christchurch, (Apr-2007)
3. J.L. Tallon, High-Temperature Superconductivity in Cuprates: Original Concept and New Developments, *20th anniversary of award of Nobel Prize to Bednorz and Mueller*, Tbilisi, Georgia, (Oct-2007)
4. J.L. Tallon, Invited participant and speaker, *Shell Technology Futures Workshop*, Bangalore, (Jan/Feb-2007)
5. J.L. Tallon, Invited speaker, *Investment Opportunities in Nanotechnology*, Sydney Hilton, (Mar-2007)

6. J.L. Tallon, Invited speaker, *Spectroscopies of Novel Superconductors*, Sendai, Japan, (Aug-2007)
7. J.L. Tallon, Special session symposium on Experiment and theory: inhomogeneities, pairing and pseudogap in Mott-Hubbard systems., *March Meeting of American Physical Society 2007*, USA, (Mar-2007)
8. R.P. Taylor, Fractals in nature, art and architecture, Queensland College of Arts, Brisbane, (Jul-2007)
9. U. Zülicke, Nanospintronics meets relativistic quantum physics, *Centre for Theoretical Chemistry and Physics*, Massey University, Albany, (Mar-2007)
10. U. Zülicke, Nanospintronics meets relativistic quantum physics, *Center for Functional Nanostructures*, University of Karlsruhe, Karlsruhe, Germany , (Jun-2007)
11. U. Zülicke, Nanospintronics meets relativistic quantum physics, *Sonderforschungsbereich 419, Magnetic heterostructures*, Ruhr-University Bochum, Germany , (Jul-2007)
12. U. Zülicke, Nanospintronics meets relativistic quantum physics, *Department of Physics*, University of Regensburg, Germany , (Jul-2007)
13. U. Zülicke, Spintronics with bubble: Spin splitting and polarisation of quantum-confined holes, *Centre for Theoretical Chemistry and Physics*, Massey University, Albany, (Dec-2007)
14. U. Zülicke, Zitterbewegung and magnetic focusing of charge carriers from spin-split bands, *Division of Solid State Physics*, Lund University, Lund, Sweden , (Jun-2007)

5. Industry Reports

1. B.J. Ruck, Optoelectronic properties of disordered GaN (report to Mosaic Crystals Ltd. Israel) detailing contractual research results, (Nov-2007)

6. Books

7. Book Chapters

1. B. Ingham, S.V. Chong, and J.L. Tallon, Organic-inorganic layered hybrid materials, in *Soft Condensed Matter: New Research* 173-194 , edited by ed. by K. I. Dillon, Nova Science Publishers , (2007)
2. P.J.S. Foot, and A.B. Kaiser, Conducting Polymers, in *Concise Encyclopedia of Chemical Technology* edited by 5th Edition , (2007)

8. Patents:

1. C.J. Dotzler, A. Edgar, and G.V.M. Williams, Fluoroperovskite radiation dosimeters and storage phosphors , Provisional patent application in the USA, Provisional patent application in the USA, AJ Park reference 564401 DDG, US filing number 60/929, 629, Jul-2007
2. J.L. Tallon, Nanotechnologies for single-molecule or single-ligand spectroscopy, US60/924, 982, Jun-2007

9. Awards, medals, fellowships:

1. J.L. Tallon, Honorary Fellowship Institute of Practising Engineers in New Zealand , (2007)
2. R.P. Taylor, Cottrell Scholarship of the Research Corporation, (2007)

10. Talks or interactions with community groups or schools:

1. B.J. Ruck, Big Science Adventures DVD Competition judge – competition run by the Royal Society of New Zealand with sponsorship from the Freemason’s Association , Wellington, (2007)
2. B.J. Ruck, Co-host/presenter during visits to School of Chemical and Physical Sciences (VUW) by Mana College (Year 11) Mana College (Year 13) Upper Hutt College and Hutt International Boys School , Wellington, (2007)
3. B.J. Ruck, Presentation of MacDiarmid Institute research and community activities to Dr Seo, Co-Chairman of Korean Leaders Forum and former Korean Minister of Science and Technology, Wellington, (Jun-2007)
4. B.J. Ruck, Presentation of MacDiarmid Institute research and outreach activities to visiting USA graduate students delegation (hosted by FRST), Wellington, (Jun-2007)
5. B.J. Ruck, Presentation of Optical Illusions physics concepts to Wellington area secondary school students at Science Experience , Wellington, (Jul-2007)
6. B.J. Ruck, Presentation of School of Chemical and Physical Sciences activities to Wellington area secondary school students at Coke Expo , Wellington, (Aug-2007)
7. B.J. Ruck, Presentation to Wellington area secondary school students during VUW Study at Vic day , Wellington, (Aug-2007)
8. B.J. Ruck, and D. Housden, Novel electronic materials: Rare earth nitrides, presentation to local area secondary school teachers about the NZ Science Mathematics and Technology Teacher Fellowship (teachers from South Wellington Intermediate Hutt Valley high School Wellington High School and Athena College), Wellington, (May-2007)
9. J.L. Tallon, Address to (200) Kings College students, Auckland, (Sep-2007)
10. J.L. Tallon, Address to IP Managers Round Table, Sky City Hotel, (Sep-2007)
11. J.L. Tallon, Address to pupils Dyer Street School, Lower Hutt, (Sep-2007)
12. J.L. Tallon, Feature interview Nine to noon, National Radio, (Sep-2007)
13. J.L. Tallon, National Radio panel discussion Rationality and faith, National Radio New Zealand, (Jan-2007)
14. R.P. Taylor, Fractal Applications in Medicine and Technology, Public lecture, Royal Society of New Zealand, Christchurch, (Sep-2007)
15. R.P. Taylor, Radio Interview, National Radio New Zealand, (Aug-2007)

11. New grant funds:

1. A. Edgar, Integrated Optical Devices, FRST subcontract to IRL, \$226,701,000 pa

2. A.B. Kaiser, Royal Society of New Zealand, Korea-New Zealand Symposium on Nano- and Bionano-Technology, \$10,800 Feb-2007
3. B.J. Ruck (lead researcher Dr. Grant Williams), Subcontractor on project Advanced spin-polarised magnetic sensors, NERF grant number CO8X0705 , \$1,875,000 over period 2007–2011
4. G.V.M. Williams, Advanced spin-polarised magnetic sensors, NERF C08X0705, \$500k p.a. 2007-2011
5. G.V.M. Williams, Integrated Optical Devices for Optical Switching and Signal Processing, NERF C08X0704, 2007-2011,\$900k p.a.
6. H.J. Trodahl, FRST , NERF Ocean influence on climate change - subcontract via NIWA, Approx. \$25 000 p.a. for 8 years
7. H.J. Trodahl, and B.J. Ruck, FRST , NERF Improved magnetic sensors -IRL subcontracts , Approx. \$60 000 p.a. for 3.75 years from October 2007
8. R.P. Taylor, A.R. Hamilton, A.P. Micolich, R. Newbury, T.P. Martin, M. Pepper, A.D. Wieck, M. Governale, and U. Zuelicke, Nanoscale electronic devices: bringing sample design, fabrication, test and theory together, ARC Linkage International LX0882222, US\$75,000 AUS\$90,000
9. R.P. Taylor, A.P. Micolich, AR Hamilton, U Zuelicke, and Dr Y Hirayama, Engineering Ultra-low Disorder Semiconductor Quantum Nanostructures, Australian Research Council, AUS\$1,300,000 - 2007-11
10. R.P. Taylor, and J. Casti, Visual Complexity, Andrea von Braun Foundation, US\$50,000 2008-9
11. R.P. Taylor, and H. Linke, Metrological of the Thermal Conductance of Single Heterostructure Nanowires, Office of Naval Research, Program on Nanometrology and Nanoelectronics, US\$100,452 2007-8
12. R.P. Taylor, and H. Linke, Metrological Probe of Electron Waves in Nanodevices and Nanocircuits, Office of Naval Research, Program on Nanometrology and Nanoelectronics, US\$100,000 2007-8
13. R.P. Taylor, and H. Linke, Metrology of Non-equilibrium Quantum Transport in the High Bias Regime, Office of Naval Research, USA , Program on Nanometrology and Nanoelectronics, US\$106,000 2008
14. R.P. Taylor, C.M. Hagerhall, and T. Laike, Investigation of Fractal Parameters That Maximise Physiological Response to Natural Patterns, FORMAS, SEK1,200,000 US\$171,480 2007-8
15. R.P. Taylor, C.M. Hagerhall, and T. Laike, The Crafoord Foundation, Relaxing with Fascinating Images? An Investigation of Physiological Response to Self-Similar Patterns, SEK200,000 US\$28,580
16. S.C. Hendy, Applications of Mathematics in the Nanosciences, NZIMA, \$380k 2007-8
17. S.C. Hendy, Chiral nanoparticles, FRST-NERF C08X0707, \$2.175m 2007-2011
18. S.C. Hendy, MoRST: Control of micro and nanoscale fluid flows, Durmont D'Urville 2007/N-04, \$25k 2007-8
19. U. Zülicke, RSNZ Marsden Fund, Jitterbug on a chip: Semiconductor nanospintronics meets relativistic quantum physics, NZ\$ 800k for 3 years

12. Visitors:

1. Prof. H von Seggern, Darmstadt University, Germany, Feb-2007, (A. Edgar)
2. Prof. S. Kasap, University of Saskatchewan, Canada, Feb-2007, (A. Edgar)
3. Dr. Siegmund Roth, Max-Planck-Institut für Festkörperforschung, Stuttgart, Germany, Feb-2007, (A.B. Kaiser)

4. Dr. Viera Skákalová, Max-Planck-Institut für Festkörperforschung, Stuttgart, Germany, Feb-2007, (A.B. Kaiser)
5. Prof. Yung Woo Park, Nano Systems Institute – National Core Research Center, Seoul National University, Korea, Feb-2007, (A.B. Kaiser)
6. Claire Meyer, Laboratoire Louis Néel, CNRS, Grenoble, France, Jun-1909, (B.J. Ruck)
7. Prof. Jürgen Haase, Physics Department, Leipzig Universität, Leipzig, Feb-2007, (G.V.M. Williams)
8. Claire Meyer, Laboratoire Luis Néel, Grenoble, Feb-2007/Feb-2008, (H.J. Trodahl)
9. Cristiana Grigorescu, Institute for Optoelectronics, Bucharest, Feb-2007, (H.J. Trodahl)
10. Jean-Luis Cantin, University of Paris, France, Feb-2007, (H.J. Trodahl)
11. Walter Lambrecht, Case-Western Reserve University, Cleveland, Feb-2007, (H.J. Trodahl)
12. Assoc. Prof. Seunghun Hong, Department of Physics, Seoul National University, Korea, Feb-2007, (J.L. Tallon)
13. Dr. James Slezak, Cornell University, USA, Feb-2007, (J.L. Tallon)
14. Professor Neil Ashcroft, Cornell University, USA, Jan/Feb-2007, (J.L. Tallon)
15. Professor Yosef Yeshuran, Institute of Superconductivity, Bar-Ilan University, Israel, Feb-2007, (J.L. Tallon)
16. Dr. Art Voter, LANL, USA, Dec-2007, (S.C. Hendy)
17. Prof. Robin Grimes, Imperial College, London, UK, Feb-2007, (S.C. Hendy)
18. Prof. Tim Schulze, University of Tennessee, USA, Dec-2007, (S.C. Hendy)
19. Assoc Prof. Alex Hamilton, University of New South Wales, Australia, Feb-2007, (U. Zülicke)
20. Dr. Michele Governale, Ruhr-University Bochum, Germany, Feb-2007, (U. Zülicke)
21. Prof. S-R Eric Yang, Korea University, Korea, Feb-2007, (U. Zülicke)
22. Prof. Yasuhiro Tokura, NTT Basic Research Labs, Japan, Feb-2007, (U. Zülicke)

13. International linkages:

1. Dr. Viera Skákalová, Max-Planck-Institut für Festkörperforschung, Stuttgart, Germany, (A.B. Kaiser)
2. Prof. Peter Foot, Materials Research Group, Kingston University, London, UK, (A.B. Kaiser)
3. Prof. Yung Woo Park, Nano Systems Institute – National Core Research Center, Seoul National University, Korea, (A.B. Kaiser)
4. Andreas Engel, University of Zurich, Geneva, Switzerland, (B.J. Ruck)
5. James Downes, Macquarie University, NSW, Australia, (B.J. Ruck)
6. Jurgen von Bardeleben, Universite de Paris 6 & 7, Associee CNRS, France, (B.J. Ruck)
7. Kevin Smith, Boston University, Massachusetts, USA, (B.J. Ruck)
8. Mark Ridgway, Australian National University, ACT, Australia, (B.J. Ruck)
9. Walter Lambrecht, Case Western Reserve University, Ohio, USA, (B.J. Ruck)
10. Dr. Chia-Jyi Liu, Department of Physics, National Changhua University of Education, Changhua, Taiwan, (G.V.M. Williams)
11. Dr. H.K. Lee, Department of Physics, Kangwon National University Chunchon, Korea, (G.V.M. Williams)
12. Dr. Jeff Lynn, NIST Center for Neutron Research, Gaithersburg, MD 20899, USA, (G.V.M. Williams)

13. Dr. Miroslav Pozek, Department of Physics, Faculty of Science, University of Zagreb, Zagreb, Croatia, (G.V.M. Williams)
14. Dr. O. P. Sushkov, School of Physics, University of New South Wales, Sydney 2052, Australia, (G.V.M. Williams)
15. Prof. Heinz von Seggern, Fachbereich Materialwissenschaft, Technische Universität Darmstadt, Germany, (G.V.M. Williams)
16. Prof. Jürgen Haase, Physics Department, Leipzig Universität, Leipzig, (G.V.M. Williams)
17. Prof. Jürgen Haase, Physics Department, Leipzig Universität, Leipzig, (G.V.M. Williams)
18. Prof. Sung-Ik Lee, National Creative Research Initiative Center for Superconductivity, Department of Physics, Pohang University of Science and Technology, Pohang, Republic of Korea, (G.V.M. Williams)
19. Brian Gallagher, Kevin Edmonds, University of Nottingham, UK, (H.J. Trodahl)
20. Cristiana Grigorescu, Institute for Optoelectronics, Bucharest, Romania, (H.J. Trodahl)
21. Hajo Eicken, University of Alaska, Fairbanks, (H.J. Trodahl)
22. Jurgen von Bardeleben, University of Paris, France, (H.J. Trodahl)
23. Kevin Smith, Boston University, USA, (H.J. Trodahl)
24. Martin Kuball, Bristol University, UK, (H.J. Trodahl)
25. Nava Setter, Igor Stolichnov, Dr.agan Damjanovic, Laboratoire Ceremaique, École Polytechnique Fédéral Lausanne, Switzerland, (H.J. Trodahl)
26. Odile Monnereau, Laurence Tortet, University of Provence, France, (H.J. Trodahl)
27. Walter Lambrecht, Case-Western Reserve University, USA, (H.J. Trodahl)
28. Dr. J.R. Cooper, Cambridge University, (J.L. Tallon)
29. Dr. J.W.Loram, Cambridge University, (J.L. Tallon)
30. Dr. Phillippe Bourges, Laboratoire Léon Brillouin, CEA-CNRS, CEA-Saclay, 91191 Gif sur Yvette, France, (J.L. Tallon)
31. Dr. Rob Robinson, Australian Nuclear Science & Technology Organisation, (J.L. Tallon)
32. Prof. Bernhard Keimer, Max Planck Institut für Festkörperforschung, Germany, (J.L. Tallon)
33. Prof. Christian Bernhard, Fribourg University, Switzerland, (J.L. Tallon)
34. Materials Science Institute, University of Oregon, USA, (R.P. Taylor)
35. School of Physics, University of New South Wales, Australia, (R.P. Taylor)
36. University of Lund, Sweden, (R.P. Taylor)
37. University of Wisconsin, USA, (R.P. Taylor)
38. Dr. Art Voter, LANL, USA, (S.C. Hendy)
39. Dr. Axel Voigt, University of Dresden, Germany, (S.C. Hendy)
40. Dr. Cecile Cottin-Bizonne, University of Lyon, France, (S.C. Hendy)
41. Dr. Mary Ryan, Imperial College, UK, (S.C. Hendy)
42. Prof. James Hill, University of Wollongong, Australia, (S.C. Hendy)
43. Prof. Robin Grimes, Imperial College, UK, (S.C. Hendy)
44. Prof. Tim Schulze, University of Tennessee, USA, (S.C. Hendy)
45. Assoc. Prof. Alex R Hamilton, University of New South Wales, Australia, (U. Zülicke)
46. Assoc. Prof. Roland Winkler, Northern Illinois University & Argonne National Lab, USA, (U. Zülicke)
47. Dr. Jens Bolte, Royal Holloway University of London, UK, (U. Zülicke)
48. Prof. Gerd Schön, University of Karlsruhe, Germany, (U. Zülicke)
49. Prof. Ming-Wei Wu, University of Science and Technology, China, (U. Zülicke)

14. Committee/board/panel memberships, editorships:

1. A.B. Kaiser, Co-Chair, AMN-3 Satellite Meeting on Nano- and Bionano-Technology, Quantum Transport in Synthetic Metals and Quantum Functional Semiconductors (NBT-QT 2007) (responsible for organization of Scientific Programme).
2. A.B. Kaiser, Editorial Board Member, Current Applied Physics (Elsevier)
3. A.B. Kaiser, Member, FRST Post Doctoral Fellowship Advisory Group
4. A.B. Kaiser, Member, Enterprise Scholarships Reference Group: Tertiary Education Commission
5. J. L. Tallon, Board Member, Asia Pacific Forum on Strongly Correlated Electron Systems
6. J. L. Tallon, Board Member, MacDiarmid Institute
7. J. L. Tallon, International Advisory Board Member, Materials and Mechanisms of Superconductivity
8. J. L. Tallon, Member, National Science Panel
9. R.P. Taylor, Consultant, NOVA's scienceNow
10. R.P. Taylor, Consultant, NOVA's Science News magazine
11. R.P. Taylor, Editorial Board Member, Chaos and Complexity Letters and the Journal of Non-linear Dynamics, Psychology and Life Sciences
12. R.P. Taylor, Journal Referee, Nature
13. R.P. Taylor, Journal Referee, Physical Review Letters
14. R.P. Taylor, Journal Referee, Physical Review B
15. R.P. Taylor, Journal Referee, Physical Review E
16. R.P. Taylor, Journal Referee, Physica A, Physica B
17. R.P. Taylor, Journal Referee, Journal of Nanotechnology
18. R.P. Taylor, Journal Referee, Surface Science
19. R.P. Taylor, Journal Referee, Applied Surface Science
20. R.P. Taylor, Journal Referee, Leonardo
21. R.P. Taylor, Journal Referee, Chaos
22. R.P. Taylor, Journal Referee, The Journal of Non-linear Dynamics
23. R.P. Taylor, Journal Referee, Psychology and Life Sciences
24. R.P. Taylor, Journal Referee, The Journal of Systems Research and Behavioral Science
25. R.P. Taylor, Journal Referee, Journal of Perception
26. R.P. Taylor, Journal Referee, The Journal of Mathematical Imaging and Vision
27. R.P. Taylor, Journal Referee, The Journal of Consciousness Studies
28. S.C. Hendy, Member, Council of the New Zealand Mathematics Society