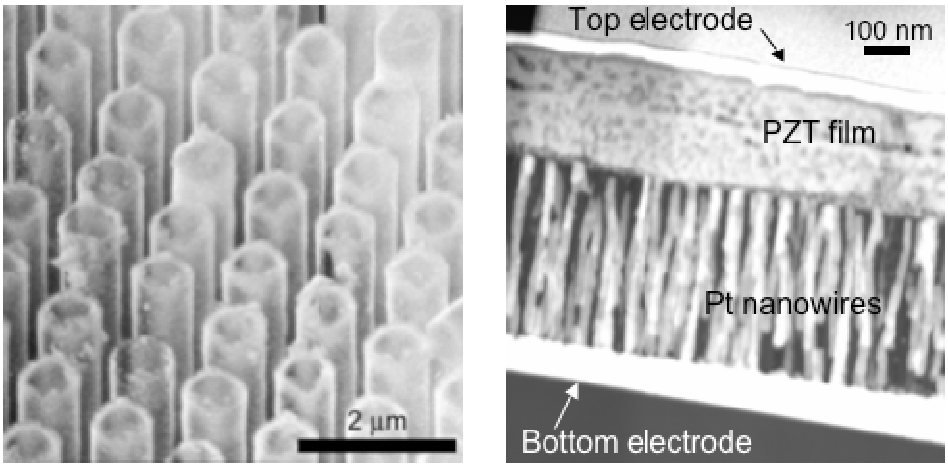
Dr Finlay D Morrison
Royal Society University Research Fellow

e-mail: fm40@st-andrews.ac.uk **tel: 01334 463855**

Research Interests: Electroceramics, solid state chemistry, functional oxides, ferroelectrics, thin films, dielectric properties, nano-structured oxides

My current research encompasses the properties of ferroelectrics and related oxides in bulk, thin film and 3D nano-scale structures. Stoichiometry, doping, defect chemistry and also ceramic microstructure often control ferroelectric properties in bulk materials. In thin film and nano-scale structures, extrinsic effects also contribute to the materials properties and in some cases dominate the response entirely. These extrinsic factors may include electrode effects and damage due to materials processing. My interest is in understanding the contributions of all these effects in both bulk ceramics and in nano-scale systems for integrated ferroelectric devices such as high permittivity materials and relaxors for capacitor applications and thin film non-volatile memory (NVRAM) devices.



Caption: Array of ferroelectric $SrBi_2Ta_2O_9$ tubes 100 micron long, 1 micron in diameter and with wall thickness less than 40 nm (left). Ferroelectric $Pb(Zr,Ti)O_3$ thin film grown on a Pt nanowire electrode array (right).

SELECTED RECENT PUBLICATIONS

1. Perovskite Lead Zirconium Titanate Nanorings: Towards Nanoscale Ferroelectric 'Solenoids' ? X.H. Zhu, P. R. Evans, D. Byrne, A. Schilling, R. J. Pollard, R. M. Bowman, J. M. Gregg, F. D. Morrison and J. F. Scott, *Appl. Phys. Lett.*, 2006, **89**, 122913.
2. Comment on Epitaxial $BiFeO_3$ Multiferroic Thin Film Heterostructures, W. Eerenstein, F.D. Morrison, J. Dho, M.G. Blamire, J.F.Scott and N.D. Mathur, *Science*, 2005, **307**, 1203a.
3. Intrinsic dielectric response in ferroelectric nano-capacitors, M.M. Saad, P. Baxter, R.M. Bowman, J.M. Gregg, F.D. Morrison and J.F. Scott, *J. Phys.: Condens. Matt.*, 2004, **16**, L451-456.
4. Effect of micro-geometry on switching and Transport in PZT capacitors: Implications for Etching in Nano-Ferroelectrics, D.J. Jung, F.D. Morrison, M. Dawber, H.H. Kim, K. Kim and J.F. Scott, *J. App. Phys.*, 2004, **95**, 4968-75.
5. High-Aspect-Ratio Piezoelectric Strontium-Bismuth-Tantalate Nanotubes, Finlay D. Morrison, Laura Ramsay and James F. Scott, *J. Phys.: Condens. Matt.*, 2003, **15**, L527-L532.
6. Characterization of La-Doped $BaTiO_3$ Ceramics Using Impedance Spectroscopy, Finlay D. Morrison, Derek C. Sinclair and Anthony R. West, *J. Am. Ceram. Soc.*, 2001, **84**, 531-538.