

Dr Davis's research interests centre upon the synthesis and characterisation of polymeric materials for the development of new properties and behaviours. The research involves a mixture of synthetic chemistry together with structural determination using for example x-ray and neutron scattering techniques. He is particularly interested in polymer orientation and electrospinning to generate polymer fibres with sub-micron diameters and is organiser with the Institute of Physics of the series of conferences "Electrospinning, Principles, Possibilities and Practice". In addition he is interested in the application of polymer characterisation techniques to Food Science. For example he is currently involved in a project to produce sustainable polymeric fibres from food waste material.



Recent highlights

1. Electro-active nanofibres electrospun from blends of poly-vinyl cinnamate and a cholesteric liquid crystalline silicone polymer U. Singh, F. Davis, S. Mohan., and G.R. Mitchell, (2013). *Journal of Materials Science*, 48 (21). pp. 7613-7619. ISSN 1573-4803 doi: 10.1007/s10853-013-7578-0
2. The Design of UV Absorbing Systems for Horticultural Applications (2013) V. Mahendra, F. J. Davis, P. Hadley, and A. Gilbert, *ISRN Materials Science Volume 2013*, Article ID 604132, <http://dx.doi.org/10.1155/2013/604132>
3. Development of novel methods to determine crystalline glucose content of honey based on DSC, HPLC, and viscosity measurements and their use to examine the setting propensity of honey (2013).. Al-Habsi, N., Davis, F. and Niranjan, K.) *Journal of Food Science*, 78 (6). E845-E852. ISSN 1750-3841 doi: 10.1111/1750-3841.12103.
4. Electrospun Supramolecular Polymer Fibres, D. Hermida-Merino, , M .Belal, , B.W. Greenland, P. Woodward, A.T. Slark, F.J. Davis, G.R. Mitchell, I.W. Hamley, and W. Hayes , *European Polymer Journal*, 48 (7). pp. 1249-1255. ISSN 0014-3057 doi: 10.1016/j.eurpolymj.2012.04.015.
5. Chain extension in electrospun polystyrene fibres: a SANS study, S.D. Mohan, G.R. Mitchell, and F.J. Davis, *Soft Matter*, 2011, 7. pp. 4397-4404. ISSN 1744-683X
6. Controlling the Electrospinning of Fibres of Poly(ϵ -caprolactone) using Dibenzylidene Sorbitol, M.Y. Kariduraganavar, F.J. Davis, G.R. Mitchell, and R.H. Olley, *Polymer International* 2010, 59 (6). pp. 827-835. ISSN 0959-8103.
7. "Enhanced Templating in the Crystallisation of Poly(ϵ -caprolactone) using 1,3:2,4-di(4-chlorobenzylidene) sorbitol", S. Wangsoub, F.J. Davis, G.R. Mitchell, and R.H. Olley, *Macromol. Rapid Commun.*, DOI: 10.1002/marc.200800497.
8. "UV irradiance as a major influence on growth, development and secondary products of commercial importance in Lollo Rosso lettuce 'Revolution' grown under polyethylene films", E. Tsormpatsidis, R.G.C. Henbest,, F.J. Davis, N.H. Battey, P. Hadley, A. Wagstaffe, *Environmental and Experimental Botany*, 2008, **63**, 232-239.