

Curriculum Vitae

of

Dr John Dennis

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Academic Qualifications

- Oct 1986 – Jul 1989:** University of Sussex, B.Sc. (hons) Chemical Physics 2¹
- Oct 1989 – Oct 1990:** University of Sussex, M.Sc., Chemical Physics.
- Oct 1990 – Oct 1993:** University of Sussex, D.Phil, Chemical Physics. Supervisor Prof. Sir H. W. Kroto FRS, Thesis title, Structure and Dynamics of the Fullerenes C₆₀ and C₇₀.
- Oct 1999 – Mar 2001:** Queen Mary, University of London: Postgraduate Certificate in Academic Practice.

Professional Qualifications

- 1990** Graduate of the Royal Society of Chemistry
- 1993** Member of the Royal Society of Chemistry
- 1993** Chartered Chemist.
- 2002** Member of the Institute of Learning and Teaching in Higher Education.
- 2004** Chartered Scientist
- 2005** Fellow of the Royal Society of Chemistry

Academic Appointments

- Jan 1994 – Dec 1994:** Postdoctoral Research Associate: Department of Applied Physics, University of Sydney, Sydney, Australia.
- Jan 1995 – Nov 1996:** Australian Research Fellow: Department of Chemistry, University of New South Wales, Sydney, Australia.
- Nov 1996 – Nov 1998:** Japan Society for the Promotion of Science Foreign Research Fellow: Department of Chemistry, Nagoya University, Nagoya, Japan.
- Dec 1998 – Sept 1999:** Humboldt Research Fellow: Hahn-Meitner Institute, Berlin, Germany.
- Sept 1999 – Aug 2004:** Lecturer in Physical Chemistry: Department of Chemistry, Queen Mary, University of London, London, UK.
- Sept 2004 –** Reader Professor in Molecular Nanostructures: Department of Physics, Queen Mary, University of London, London, UK.

Personal Research Fellowships

1994 Australian Research Fellowship, Australian Research Council.

1996 Foreign Research Fellowship, Japan Society for the Promotion of Science.

1998 Humboldt Research Fellowship, Alexander von Humboldt Foundation.

Research Experience

My research experience began during August 1989, as a mature graduate student with Prof. H. W. Kroto (University of Sussex), conducting pioneering research on the third allotrope of carbon: the fullerenes – for the discovery of which my supervisor later won the Nobel Prize for Chemistry (1996). I then continued fullerene research, concentrating on endohedral fullerenes, higher fullerenes, and superconducting fullerides through postdoctoral work at the University of Sydney, Australia; the University of New South Wales, Australia (ARC Research Fellow); Nagoya University, Japan (JSPS Research Fellow); and the Hahn-Meitner Institute, Germany (Humboldt Research Fellow). In September 1999, I was appointed as a lecturer in Physical Chemistry at Queen Mary, University of London (“QMUL”), and transferred to the Department of Physics at QMUL and conferred the title of Reader Professor of the University of London in 2005.

20 years after gaining my D.Phil., I have co-authored *ca.* 75 primary refereed-journal articles on fullerenes alone (including three letters to Nature) – and have about 20 publications in conference proceedings volumes. These papers had received over 4900 citations by December 2014: averaging *ca.* 65 citations per paper, and generating an *h*-index of 35. I have given research seminars at *ca.* 40 world-class institutions (31 outside the UK), and was invited to present his work at a similar number of major international conferences.

My research achievements include the purification and spectroscopic characterisation of *ca.* one-quarter of all endohedral fullerenes so far isolated, and being the first to purify 14 of the 17 fully isolated fullerenes. I am considered the world-leading expert on fullerene production and purification methods.

My research interests lie in the spectroscopic characterisation of isomer-pure fullerenes and endohedral fullerene complexes, and solid-state studies of fullerenes. More recently, my research includes the study of double-walled carbon nanotubes and carbon peapods (nanotubes containing endohedral fullerene complexes), with the aim of exploiting their unique properties within the emerging research fields of nano-electronics (organic solar-cells and light-emitting diodes) and quantum information processing.

Much of my recent research has been conducted with collaborators in China – Prof Chun-Ru Wang at the Institute of Chemistry of the Chinese Academy of Sciences Beijing in particular, under funding from the Royal Society. I also had the pleasure of hosting Professor Chun-Li Bai (President CAS), when he visited me at my laboratory during 2007.

Selected Publications

- Crystal Structure and Bonding of Ordered C₆₀, W.I.F. David, R.M. Ibberson, J.C. Mathewman, K. Prassides, T.J.S. Dennis, J.P. Hare, H.W. Kroto, R. Taylor, and D.R.M. Walton, *Nature*, 353 (1991), 147.
- No Lubricants from Fluorinated C₆₀. R. Taylor, A.G. Avent, T.J. Dennis, J.P. Hare, H.W. Kroto, D.R.M. Walton, J.H. Holloway, E.G. Hope and G.J. Langley, *Nature*, 355 (1991), 27.
- Degradation of C₆₀ by light, R. Taylor, J.P. Parsons, A.G. Avent, J.P. Rannard, T.J. Dennis, J.P. Hare, H.W. Kroto and D.R.M. Walton, *Nature*, 361 (1991), 277.
- Electronic Spectra and Transitions on the Fullerene C₆₀. S. Leach, M. Vervloet, A. Despres, E. Breheret, J.P. Hare, T.J. Dennis, H.W. Kroto, R. Taylor and D.R.M. Walton. *Chemical Physics*, 160, (1992), 251.
- Structural Phase Transitions in the Fullerene C₆₀. W.I.F. David, R.M. Ibberson, T.J. Dennis, J.P. Hare, K. Prassides. *Europhysics Letters*, 18 (1992), 219.
- Large Infrared Nonlinear Optical Response of C₆₀ Buckminster Fullerene, W.J. Blau, H.J. Byrne, D.J. Cardin, T.J. Dennis, J.P. Hare, H.W. Kroto, R. Taylor and D.R.M. Walton, *Phys. Rev. Lett.*, 67 (1991), 1423.
- Production and Isolation of Endohedral Strontium, and Barium-based Mono-metallofullerenes: Sr/Ba@C₈₂ and Sr/Ba@C₈₄. T.J.S. Dennis and H. Shinohara. *Chemical Physics Letters*, 278 (1997), 107.
- Isomer Specific Intercalation Chemistry: Potassium insertion into D₂ and D_{2d} isomers of C₈₄. K.M. Allen, T.J.S. Dennis, M.J. Rossiensky and H. Shinohara. *J. Am. Chem. Soc.*, 120 (1998), 6681.
- Isolation and Characterisation of the Two Major Isomers of [84]Fullerene (C₈₄). T.J.S. Dennis, T. Kai, T. Tomiyama and H. Shinohara. *Chemical Communications*, (1998), 619.
- Molecular Motion of Endohedral Metallofullerenes in Single-Walled Carbon Nanotubes, A.N. Khlobystov, K. Porfyrakis, M. Kanai, D.A. Britz, A. Ardavan, H. Shinohara, G.A.D. Briggs and T.J.S. Dennis, *Angewandte Chemie International Edition*. 43 (2004), 1386.
- Does an encapsulated atom 'feel' the effects of adsorption?: X-ray standing wave spectroscopy of Ce@C₈₂ on Ag(111), R.A.J. Woolley, K.H.G. Schulte, L. Wang, P.J. Moriarty, B.C.C. Cowie, H. Shinohara, M. Kanai, T.J.S. Dennis, *Nano Letters*, 4 (2004), 261.
- Hyperfine structure of Sc@C₈₂ from ESR and DFT, G.W. Morley, B.J., Herbert, S.M. Lee, K. Porfyrakis, T.J.S. Dennis, D. Nguyen-Manh, R. Scipioni, J. van Tol, A.P. Horsfield, A. Ardavan, *Nanotechnology*, 16 (2005), 2469.
- Organophosphonate Functionalized Gd@C₈₂ as a Magnetic Resonance Imaging Contrast Agent. C.Y. Shu, C.R. Wang, J.F. Zhang, H.W. Gibson, H.C. Dorn, F.D. Corwin, P.P. Fatouros, and T.J.S. Dennis., *Chemistry of Materials*, 20 (2008), 2106.
- Carbene Is Finally Attached to the Equator of C₇₀ – Production of the Most Stable C₇₁H₂ Isomer: 2aH-2(12)a-Homo(C₇₀-D_{5h(6)})[5,6]fullerene, B. Li, C. Shu, X. Lu, L. Dunsch, Z. Chen, T.J.S. Dennis, Z. Shi, L. Jiang, T. Wang, W. Xu, C.R. Wang, *Angewandte Chemie International Edition*, 49 (2010), 962.
- Electron-induced excitation of vibrations of Ce atoms inside a C₈₀ cage, A. Strozecka, M. Muthukumar, J.A. Larsson, A. Dybek, T.J.S. Dennis, J. Myslivecek, B. Voigtlander, *Physical Review B*, 83 (2011), 165414.
- Hot electron production and diffuse excited states in C₇₀, C₈₂, and Sc₃N@C₈₀ characterized by angular-resolved photoelectron spectroscopy. J.O. Johansson, E. Bohl, G.G., Henderson, B. Mignolet, T.J.S. Dennis, F. Remacle, F. E.E.B. Campbell. *Journal of Chemical Physics*, 139 (2013), 084309.
- Endohedral Fullerene Ce@C₈₂ on Cu(111): Orientation, Electronic Structure, and Electron-Vibration Coupling. K. Muthukumar, A. Strozecka, J. Myslivecek, A. Dybek, T.J.S. Dennis, B. Voigtlander, J.A. Larsson, *Journal of Physical Chemistry C*, 117 (2013), 1656.
- Iron-filled multiwalled carbon nanotubes surface-functionalized with paramagnetic Gd (III): A candidate dual-functioning MRI contrast agent and magnetic hyperthermia structure. T. Peci, T.J.S. Dennis, M. Baxendale, *Carbon*, 87 (2015), 226.