

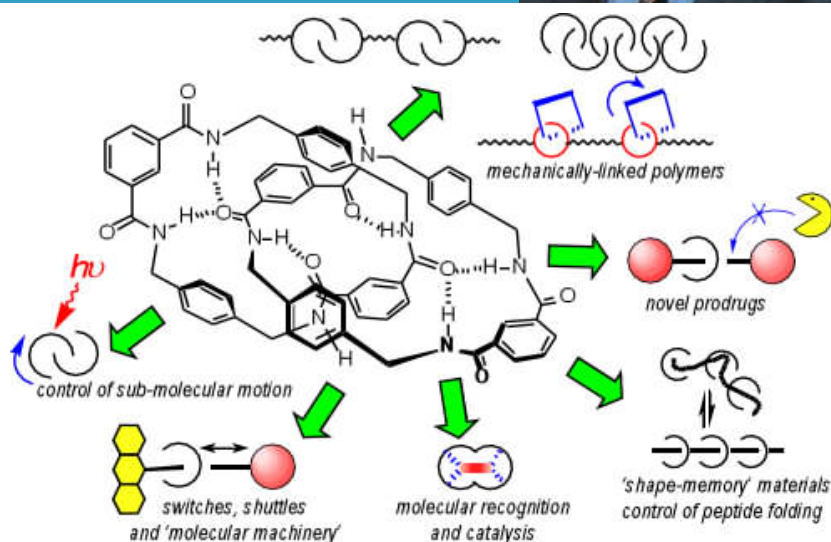
**Professor David A Leigh FRS
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Research Interests: synthetic organic chemistry, design and synthesis of functional molecules, supramolecules and macromolecules, artificial "molecular machines"



Our research group is concerned with developing simple ideas and concepts across the traditional branches of the molecular, biomolecular and materials sciences by the design and synthesis of new types of molecular level architecture's to control and influence function and properties. Following the discovery of a simple hydrogen bond-directed route to catenanes (mechanically-interlocked rings) in our laboratories a few years ago, we are currently exploring several areas of application including catalysis (reagents that function through hydrogen bonding), smart materials and "molecular machines" (catenane and rotaxane-based molecular devices), biological chemistry (peptide and protein rotaxanes, novel prodrug systems) and macromolecules (mechanically-linked polymers).



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SELECTED RECENT PUBLICATIONS

1. For a review see: E.R. Kay, D.A. Leigh and F. Zerbetto *Angew Chem Int Ed* **46**, 72-191 (2007); "Synthetic Molecular Motors and Mechanical Machines".
2. C.-F. Lee, D. A. Leigh, R. G. Pritchard, D. Schultz, S. J. Teat, G. A. Timco and R. E. P. Winpenny, *Nature*, **458**, 314-318 (2009); "Hybrid Organic-Inorganic Rotaxanes and Molecular Shuttles".
3. V. Serreli, C.-F. Lee, E.R. Kay and D.A. Leigh *Nature* **445**, 523-527 (2007); "A Molecular Information Ratchet".
4. E.R. Kay and D.A. Leigh *Nature* **440**, 286-287 (2006); "Lighting Up Nanomachines".
5. J. Berná, D.A. Leigh, M. Lubomska, S.M. Mendoza, E.M. Pérez, P. Rudolf, G. Teobaldi and F. Zerbetto *Nature Mater* **4**, 704-710 (2005); "Macroscopic Transport by Synthetic Molecular Machines".
6. V. Hernández, E.R. Kay and D.A. Leigh, *Science* **306**, 1532-1537 (2004); "A Reversible Synthetic Rotary Molecular Motor".
7. D.A. Leigh, J.K.Y. Wong, F. Dehez and F. Zerbetto, *Nature* **424**, 174-179 (2003); "Unidirectional Rotation in a Mechanically Interlocked Molecular Rotor".
8. M. Cavallini, F. Biscarini, S. León, F. Zerbetto, G. Bottari and D.A. Leigh, *Science* **299**, 531 (2003); "Information Storage using Supramolecular Surface Patterns".
9. A.M. Brouwer, C. Frochot, F.G. Gatti, D.A. Leigh, L. Mottier, F. Paolucci, S. Roffia and G.W.H. Wurpel, *Science* **291**, 2124-2128 (2001); "Photoinduction of Fast, Reversible Translational Motion in a Hydrogen-Bonded Molecular Shuttle".
10. V. Bermudez, N. Capron, T. Gase, F.G. Gatti, F. Kajzar, D.A. Leigh, F. Zerbetto and S. Zhang, *Nature* **406**, 608-611 (2000); "Influencing Submolecular Motion with an Alternating Electric Field".