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Reader in Physical Chemistry

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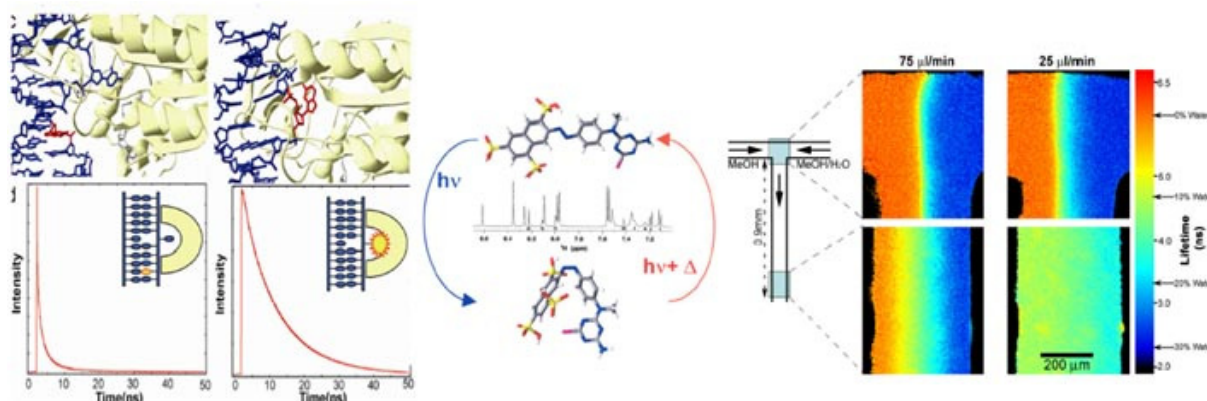
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Research Interests: photophysics and photochemistry, time-resolved fluorescence spectroscopy, fluorescence lifetime imaging microscopy, DNA conformation and interactions, microfluidics



My research is concerned with the study of molecular photophysics and photochemistry and the development and application of fluorescence spectroscopy and imaging. I am particularly interested in the application of fluorescence methods to biomolecular systems. Current projects in my group include:

- Probing DNA conformation and DNA-enzyme interactions, using time-resolved fluorescence spectroscopy.
- Quantitative spatial mapping of mixing, temperature, pH and other measurands in microfluidic (lab-on-a-chip) systems, using fluorescence lifetime imaging microscopy (FLIM).
- Ultrasensitive fluorescence detection of surface-bound protein, e.g. protein contamination on surgical instruments.
- Developing advanced photonics for the study of biological systems.
- Investigating the photoisomerisation of azo dyes, using NMR spectroscopy with in situ laser irradiation.



SELECTED RECENT PUBLICATIONS

1. 2-Aminopurine flipped into the active site of the adenine-specific DNA methyltransferase M.TaqI: crystal structures and time-resolved fluorescence, T. Lenz, E.Y.M. Bonnist, G.Pljevaljcic, R.K. Neely, D.T.F. Dryden, A.J. Scheidig, A.C. Jones, E. Weinhold, *J. Am. Chem. Soc* 2007, **129**, 6240-6248.
2. Photophysics and X-ray structure of crystalline 2-aminopurine, R.K. Neely, S.W. Magennis, S.Parsons, A.C. Jones, *ChemPhysChem* 2007, **8**, 1095-1102.
3. High-precision FLIM-FRET in fixed and living cells reveals heterogeneity in a simple CFP-YFP fusion protein, M. Millington, J.G. Grindlay, K. Altenbach, R.K. Neely, W. Kolch, M. Bencina, N.D. Read, A.C. Jones, D.T.F Dryden, S.W. Magennis, *Biophysical Chemistry* 2007, **127**, 155-164.
4. Structural characterisation of the photoisomers of reactive sulfonated azo dyes by NMR spectroscopy and DFT calculations, K.M. Tait, J.A. Parkinson, D.I. Gibson, P.R. Richardson, W.J. Ebenezer, M.G. Hutchings and A.C. Jones, *Photochem. Photobiol. Sci* (in press, published on web 20 April 2007)
5. Influence of Base Dynamics on the Conformational Properties of DNA: Observation of Static Conformational States in Rigid Duplexes at 77 K, R.K. Neely and A.C. Jones, *J. Am. Chem. Soc.* 2006, **128**, 15952-15923
6. Time-resolved fluorescence of 2-aminopurine as a probe of base flipping in M.HhaI-DNA complexes. R.K. Neely, D. Daujotyte, S. Grazulis, S.W. Magennis, D.T.F. Dryden, S. Klimasauskas, A.C. Jones, *Nucleic Acids Research*, 2005, **33**, 6953-6960.
7. Quantitative spatial mapping of mixing in microfluidic systems. S.W. Magennis, E.M. Graham, A.C. Jones, *Angew. Chem. Int. Ed.* 2005, **44**, 6512-6516