

Curriculum Vitae

Name: Jay Deep WADHAWAN
Date of Birth: June 24, 1978
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Department of Physical Sciences (Chemistry), The University of Hull, Cottingham Road, Kingston-upon-Hull HU6 7RX, United Kingdom.
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Experience

2005 - Lecturer in Toxicology/Bioanalytical Chemistry, Department of Physical Sciences (Chemistry), The University of Hull, Kingston-upon-Hull, United Kingdom.
Position taken up August 15, 2005.

Education

2003 - 2005 Post-doctoral research studying *Electrochemistry in Nanometric Environments* at Ecole Normale Supérieure, Département de Chimie, Paris, France.
Supervisors: Professor Christian AMATORE and Professor Emmanuel MAISONHAUTE.

2000 - 2003 *D. Phil.* (Chemistry)
Thesis title: *Electrochemical Sensor Engineering*
St. John's College, and Physical and Theoretical Chemistry Laboratory, Oxford University, United Kingdom.
Supervisor: Professor Richard G. COMPTON.
Thesis submitted for examination on July 22, 2003; thesis examined on October 17, 2003 by Professor H. A. O. HILL, FRS (Oxford University, UK) and Professor L. M. PETER (Bath University, UK). Graduation date: October 23, 2004.

1996 - 2000 Chemistry undergraduate at St. John's College, Oxford University, United Kingdom.
M. Chem. Class I (with honours) awarded July 15, 2000. Graduation date: April 3, 2001.
B.A. unclassified honours awarded June 21, 1999.
Quantum Chemistry Supplementary Subject awarded with distinction (March, 1998).
Distinction in Preliminary Examinations, Honour School of Natural Sciences, Chemistry (June, 1997)
Scholarship and Prizes:
Casberd Scholarship (1997 - 2000).
Turbutt Memorial Prize for Practical Organic Chemistry (July, 1998)
Eight College Book Prizes for performance in Collections (1997 - 2000).

1989 - 1996 King Edward VI Aston School, Birmingham, United Kingdom.
GCE "A"-Level: four passes: Chemistry (A), Mathematics (A), Physics (A), General Studies (B).
GCE "AS"-Level: one pass: Further Mathematics (A)
GCSE Level: ten passes: Chemistry (A*), Computing (A*), French (A*), Geography (A*), German (A*), Mathematics (A*), Physics (A*), Biology (A), English (A), English Literature (A).
Scholarships and Prizes:
Hale Scholarship (1996).
King Edward Scholarship (1994).
Temperley Memorial Prize for Chemistry (1996).
Barnett Prize for Chemistry (1995).
Four prizes for academic achievement (1991 - 94).
Two Hale Prizes for Public Speaking (1993, 1992).
Shale Prize for Modern Languages (1992).

Professional Membership/Duties

- 2007 - Member of the Executive Committee of the Royal Society of Chemistry Electrochemistry Group.
 2007 - Editor of the RSC Electrochemistry Group/SCI Electrochemical Technology Group newsletter.
 2007 - Member of International Society of Electrochemistry.
 2007 - Member of the Electrochemistry Society.
 2007: Member of the Société Française de Chimie.
 2006 - Life-long member of the Indian Society of Electroanalytical Chemistry.
 2008: One of two panel members for electrochemistry for Royal Irish Academy National Ireland Fellowships.
 2007 - Reviewer of EPSRC, BBSRC, Leverhulme Trust, Royal Society, and RSC grant applications.
Doctorate thesis examining: Internal examiner on one occasion (October, 2007), independent chair on two occasions (July, 2008 and October, 2008), external examiner at University of Manchester (November, 2007) and University of Oxford (October, 2008).

Complete list of publications (December 2008)

- 1. Model Solutions to Section 6.2 of *Electrode Potentials*, R. G. Compton, G. H. W. Sanders, Oxford University Press, Oxford, 1996**
 N. S. Lawrence, J. D. Wadhawan, R.G. Compton. Published on the web, December, 1997:
<http://physchem.ox.ac.uk/~rgc/publications/answers.htm>
- 2. Foundations of Physical Chemistry: Worked Examples**
 N. S. Lawrence, J. D. Wadhawan, R. G. Compton, Oxford Chemistry Primer 68, Oxford University Press, Oxford, 1999.
- 3. Voltammetry of electroactive liquid redox systems: anion insertion and chemical reactions in microdroplets of *para*-tetrakis(6-methoxyhexyl)phenylenediamine, *para*- and *meta*-tetrahexylphenylenediamine**
 F. Marken, A. N. Blythe, J. D. Wadhawan, R. G. Compton, S. D. Bull, R. T. Aplin, S. G. Davies, *J. Solid State Electrochem.*, **2001**, 5, 17-22.
- 4. Voltammetry of electroactive oil droplets. Part II: Comparison of experimental and simulation data for coupled ion and electron insertion processes and evidence for microscale convection**
 J. C. Ball, F. Marken, Q. Fulian, J. D. Wadhawan, A. N. Blythe, U. Schröder, R. G. Compton, S. D. Bull, S. G. Davies, *Electroanalysis*, **2000**, 12, 1017-25.
- 5. Photoelectrochemically driven processes at the N,N,N',N'-tetrahexylphenylenediamine microdroplet | electrode | aqueous electrolyte triple interface**
 J. D. Wadhawan, R. G. Compton, F. Marken, S. D. Bull, S. G. Davies, *J. Solid State Electrochem.*, **2001**, 5, 301-5.
- 6. Ionic liquid modified electrodes. Unusual partitioning and diffusion effects of Fe(CN)₆^{4-/3-} in droplet and thin layer deposits of 1-methyl-3-(2,6-(S)-dimethylocten-2-yl)-imidazolium tetrafluoroborate**
 J. D. Wadhawan, U. Schröder, A. Neudeck, S. J. Wilkins, R. G. Compton, F. Marken, C. S. Consorti, R. F. de Souza, J. Dupont, *J. Electroanal. Chem.*, **2000**, 493, 75-83.
- 7. Water-induced accelerated ion diffusion: voltammetric studies in 1-methyl-3-(2,6-(S)-dimethylocten-2-yl)-imidazolium tetrafluoroborate, 1-butyl-3-methylimidazolium tetrafluoroborate and hexafluorophosphate ionic liquids**
 U. Schröder, J. D. Wadhawan, R. G. Compton, F. Marken, P. A. Z. Suarez, C. S. Consorti, R. F. de Souza, J. Dupont, *New J. Chem.*, **2000**, 24, 1009-15.
- 8. Sono-emulsion electrosynthesis: electrode-insensitive Kolbe reactions**
 J. D. Wadhawan, F. Marken, R. G. Compton, S. D. Bull, S. G. Davies, *Chem. Commun.*, **2001**, 87-8.
- 9. Emulsion electrosynthesis in the presence of power ultrasound. Biphasic Kolbe coupling processes at platinum and boron-doped diamond electrodes**
 J. D. Wadhawan, F. J. Del Campo, R. G. Compton, J. S. Foord, F. Marken, S. D. Bull, S. G. Davies, D. J. Walton, S. Ryley, *J. Electroanal. Chem.*, **2001**, 507, 135-43.

10. **The electroreduction of carbon dioxide in dimethylsulphoxide at gold microdisc electrodes: current | voltage waveshape analysis**
P. J. Welford, B. A. Brookes, J. D. Wadhawan, H. B. McPeak, C. E. W. Hahn, R. G. Compton, *J. Phys. Chem. B*, **2001**, *105*, 5253-61.
11. **Laminated microelectrodes: a simple approach to the construction of inexpensive microelectrodes with a variety of geometries**
P. J. Welford, J. Freeman, S. J. Wilkins, J. D. Wadhawan, C. E. W. Hahn, R. G. Compton, *Anal. Chem.*, **2001**, *73*, 6088-92.
12. **Microelectrode studies of the reaction of superoxide with carbon dioxide in dimethylsulphoxide**
J. D. Wadhawan, P. J. Welford, E. Maisonhaute, V. Climent, N. S. Lawrence, R. G. Compton, H. B. McPeak, C. E. W. Hahn, *J. Phys. Chem. B*, **2001**, *105*, 10659-68.
13. **Photoelectrochemical reduction of chlorinated nitrobenzenes: heavy atom versus radical ion lifetime effects**
G. Macfie, J. Wadhawan, R. G. Compton, *J. Electroanal. Chem.*, **2001**, *510*, 120-7.
14. **EPR spectroscopy in electrochemistry**
J. D. Wadhawan, R. G. Compton, in A. J. Bard, M. Stratmann (eds.), *Encyclopædia of Electrochemistry*, volume 2, *Interfacial Kinetics and Mass Transport*, E. J. Calvo (ed.), chapter 3.2, Wiley-VCH, Weinheim, Germany, 2003, pp. 170-220.
15. **Biphasic sonoelectrosynthesis: a review**
J. D. Wadhawan, F. Marken, R. G. Compton, *Pure Appl. Chem.*, **2001**, *73*, 1947-55.
16. **Probing thermodynamic aspects of electrochemically driven ion transfer processes across liquid | liquid interfaces: pure versus diluted redox liquids**
U. Schröder, J. Wadhawan, R. G. Evans, R. G. Compton, B. Wood, D. J. Walton, R. R. France, F. Marken, P. C. Bulman Page, C. M. Hayman, *J. Phys. Chem. B*, **2002**, *106*, 8697-704.
17. **Transition metal phenolate anions**
L. H. Doerrer, M. C. Buzzeo, M. A. Pellow, R. G. Compton, J. D. Wadhawan, *Abstracts of Papers*, 223rd ACS National Meeting, Orlando, FL., USA, April 7-11, 2002.
18. **Voltammetry of electroactive oil droplets: electrochemically-induced ion insertion, expulsion and reaction processes at microdroplets of N,N,N',N'-tetraalkyl-*para*-phenylenediamines (TRPD, R = n-butyl, n-hexyl, n-heptyl and n-nonyl)**
J. D. Wadhawan, R. G. Evans, C. E. Banks, S. J. Wilkins, R. R. France, N. J. Oldham, A. J. Fairbanks, B. Wood, D. J. Walton, U. Schröder, R. G. Compton, *J. Phys. Chem. B*, **2002**, *106*, 9619-32.
19. **Photoelectrochemistry of bromonitrobenzenes: mechanism and photoelectrochemically-induced Halex reactions**
J. D. Wadhawan, T. J. Davies, A. D. Clegg, N. S. Lawrence, J. C. Ball, O. V. Klymenko, N. V. Rees, D. Bethell, M. P. Woolfall, R. R. France, R. G. Compton, *J. Electroanal. Chem.*, **2002**, *533*, 33-70.
20. **The simultaneous voltammetric determination and detection of oxygen and carbon dioxide; a study of the kinetics of the reaction between superoxide and carbon dioxide in non-aqueous media using membrane-free gold disc microelectrodes**
J. D. Wadhawan, P. J. Welford, H. B. McPeak, C. E. W. Hahn, R. G. Compton, *Sens. Acts. B, Chemical*, **2003**, *88*, 40-52.
21. **Photoelectrochemical dechlorination of phenols**
T. J. Davies, J. D. Wadhawan, R. G. Compton, *Photochem. Photobiol. Sci.*, **2002**, *1*, 902-6
22. **Voltammetry of graphite electrodes modified with microdroplets of n-butylferrocene**
J. D. Wadhawan, R. G. Evans, R. G. Compton, *J. Electroanal. Chem.*, **2002**, *533*, 71-84.
23. **Surfactant-free emulsion electrosynthesis: electrocatalytic formation of carbon-carbon bonds**

- T. J. Davies, C. E. Banks, B. Nuthakki, J. F. Rusling, R. R. France, J. D. Wadhawan, R. G. Compton, *Green Chem.*, **2002**, *4*, 570-7.
24. **Ultrasound and electrosynthesis**
R. G. Compton, J.; L. Hardcastle, F. J. del Campo, J; D; Wadhawan, in A. J. Bard, M. Stratmann (eds.), *Encyclopaedia of Electrochemistry*, volume 3, *Instrumentation and Electroanalytical Chemistry*, P. R. Unwin (ed.), chapter 2.10, Wiley-VCH, Weinheim, Germany, 2003, pp.328-49.
25. **A computational and experimental study of the cyclic voltammetric response of partially blocked electrodes, part I: non-overlapping, uniformly distributed blocking systems**
B. A. Brookes, T. J. Davies, A. C. Fisher, R. G. Evans, S. J. Wilkins, K. Yunus, J. D. Wadhawan, R. G. Compton, *J. Phys. Chem. B*, **2003**, *107*, 1616-27.
26. **Book Review: "Electroanalytical Methods: Guide to Experiments and Applications", F. Scholz (Ed.), Springer-Verlag, Berlin, 2002**
Chem. Educator, **2002**, *7*, 321-2.
27. **A computational and experimental study of the cyclic voltammetric response of partially blocked electrodes, part II: randomly distributed and overlapping blocking systems**
T. J. Davies, B. A. Brookes, A. C. Fisher, K. Yunus, S. J. Wilkins, P. R. Greene, J. D. Wadhawan, R. G. Compton, *J. Phys. Chem. B*, **2003**, *107*, 6431-44.
28. **Reactive chemistry via the redox switching of microdroplets of 4-nitrophenyl nonyl ether in the presence of aqueous electrolytes**
A. J. Wain, N. S. Lawrence, P. R. Greene, J. D. Wadhawan, R. G. Compton, *Phys. Chem. Chem. Phys.*, **2003**, *5*, 1867-75.
29. **Voltammetry at micro-mesh electrodes**
J. D. Wadhawan, P. J. Welford, A. C. Fisher, K. Yunus, R. G. Compton, *J. Brazil. Chem. Soc.*, **2003**, *14*, 510-6.
30. **Electrochemical studies of vitamin K₁ microdroplets: electrocatalytic hydrogen evolution**
A. J. Wain, J. D. Wadhawan, R. G. Compton, *ChemPhysChem*, **2003**, *4*, 974-82.
31. **Electrocatalytic reactions mediated by N,N,N',N'-tetraalkyl-1,4-phenylenediamine redox liquid microdroplet-modified electrodes: chemical and photochemical reactions in, and at the surface of, femtolitre droplets**
J. D. Wadhawan, A. J. Wain, A. N. Kirkham, D. J. Walton, B. Wood, R. R. France, S. D. Bull, R. G. Compton, *J. Am. Chem. Soc.*, **2003**, *125*, 11418-29.
32. **Voltammetry of oxygen in the room-temperature ionic liquids 1-ethyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide and hexyltriethylammonium bis((trifluoromethyl)sulfonyl)imide: one-electron reductions to form superoxide. Steady-state and transient behaviour in the same cyclic voltammogram resulting from widely different diffusion coefficients of oxygen and superoxide**
M. C. Buzzeo, O. V. Klymenko, J. D. Wadhawan, C; Hardacre, K. R. Seddon, R. G. Compton, *J. Phys. Chem. A*, **2003**, *107*, 8872-8.
33. **Electrochemical probing of photochemical reactions inside femtolitre droplets confined to electrodes**
J. D. Wadhawan, A. J. Wain, R. G. Compton, *ChemPhysChem*, **2003**, *4*, 1211-5.
34. **Electrochemistry of immobilised redox droplets: concepts and applications**
C. E. Banks, T. J. Davies, R. G. Evans, G. Hignett, A. J. Wain, N. S. Lawrence, J. D. Wadhawan, F; Marken, R. G. Compton, *Phys. Chem; Chem. Phys.*, **2003**, *5*, 4053-69.
35. **Electrochemical detection of As(III) via iodine electrogenerated at platinum, gold, diamond or carbon-based electrodes**
G. Hignett, J. D. Wadhawan, N. S. Lawrence, D. Q. Hung, C. Prado, F. Marken, R. G. Compton, *Electroanalysis*, **2004**, *16*, 897-903.
36. **An electrochemical study of the oxidation of 1,3,5-tris[4-[(3-methylphenyl)phenylamino]**

phenyl]benzene

N. V. Rees, J. D. Wadhawan, O. V. Klymenko, B. A. Coles, R. G. Compton, *J. Electroanal. Chem.*, **2004**, *563*, 191-202.

37. **Kinetic analysis of the reaction between electrogenerated superoxide and carbon dioxide in the room temperature ionic liquids 1-ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide and hexyltriethylammonium bis(trifluoromethylsulfonyl)imide**
M. C. Buzzeo, O. V. Klymenko, J. D. Wadhawan, C. Hardacre, K. R. Seddon, R. G. Compton, *J. Phys. Chem B.*, **2004**, *108*, 3947-54.
38. **Biphasic redox chemistry of α -tocopherol: evidence for electrochemically-induced hydrolysis and dimerisation on the surface of, and within, femtolitre droplets immobilised on graphite electrodes**
A. J. Wain, J. D. Wadhawan, R. R. France, R. G. Compton, *Phys. Chem. Chem. Phys.*, **2004**, *6*, 836-42.
39. **The oxidation of cysteine by electrogenerated octacyanomolybdate (V)**
O. Nekrassova, J. Kershaw, J. D. Wadhawan, N. S. Lawrence, R. G. Compton, *ibid.*, **2004**, *6*, 136-20.
40. **Selective activation of glycosyl donors utilising electrochemical techniques: a study of the thermodynamic oxidation potential of a range of β -chalcoglycosides**
R. R. France, N. V. Rees, J. D. Wadhawan, A. J. Fairbanks, R. G. Compton, *Org. Biomolec. Chem.*, **2004**, *2*, 2188-94.
41. **Selective electrochemical glycosylation by reactivity tuning**
R. R. France, R. G. Compton, B. G. Davis, A. J. Fairbanks, N. V. Rees, J. D. Wadhawan, *ibid.*, **2004**, *2*, 2195-2202.
42. **Low temperature electrochemistry as a mechanistic probe for the partial reduction of heterocycles**
T. J. Donohoe, D. J. Johnson, R. G. Compton, J. D. Wadhawan, *Tetrahedron*, **2004**, *60*, 5945-52.
43. **Homoleptic cobalt and copper phenolate $A_2[M(OAr)_4]$ compounds: the effect of phenoxide fluorination**
M. C. Buzzeo, A. H. Iqbal, C. M. Long, D. Millar, S. Patel, M. A. Pellow, S. A. Saddoughi, A. L. Smenton, J. F. C. Turner, J. D. Wadhawan, R. G. Compton, L. N. Zakharov, J. A. Golen, A. L. Rheingold, L. H. Doerrer, *Inorg. Chem.*, **2004**, *43*, 7709-25.
44. **Theoretical and experimental study of the ECE mechanism at micro-ring electrodes**
I. B. Svir, A. Oleinick, K. Yunus, A. C. Fisher, J. D. Wadhawan, T. J. Davies, R. G. Compton, *J. Electroanal. Chem.*, **2005**, *578*, 289-99.
45. **Electrochemistry of β -lapachone and its diazoderivative: relevance to their compared anti-microbial activities**
F. C. de Abreu, D. C. M. Ferreira, J. Wadhawan, C. Amatore, V. F. Ferreira, M. N. da Silva, M. C. B. V. de Souza, T. S. Gomes, E. A. Ximenes, M. O. F. Goulart, *Electrochem. Commun.*, **2005**, *7*, 767-772.
46. **Ultra-fast voltammetry for probing interfacial electron transfer: what rate limits electron transfer through oligo(phenylenevinylene)-based molecular wires?**
C. Amatore, E. Maisonhaute, B. Schöllhorn, J. Wadhawan, *ChemPhysChem*, **2007**, *8*, 1321-9.
47. **Electrochemical characterisation of novel water-soluble ruthenocene complexes: an anion-dependent response**
N. S. Lawrence, C. E. Banks, G. J. Tustin, T. G. J. Jones, R. B. Smith, J. Davis, J. D. Wadhawan, *Electrochem. Commun.*, **2007**, *9*, 1451-5.
48. **Ferrocenyl oligo(phenylene-vinylene) thiols for the construction of self-assembled monolayers**
C. Amatore, S. Gazard, E. Maisonhaute, C. Pebay, B. Schöllhorn, J.-L. Syssa-Magalé, J. Wadhawan, *Eur. J. Inorg. Chem.*, **2007**, 4035-42.
49. **N-N bond cleavage in N-nitrosoarylamines**
L. A. Evans, M. Petrovic, M. Antonijevic, C. Wiles, P. Watts, J. Wadhawan, *J. Phys. Chem. C*, **2008**, *112*, 12928-12935.

50. **New insights into biological influence on the geochemistry of freshwater carbonate deposits**
M. Rogerson, H. M. Pedley, J. D. Wadhawan, R. Middleton, *Geochim. Cosmochim. Acta*, **2008**, *72*, 4976-87.
51. **Reaction between L-cysteine and 10-methylphenothiazine cation radical released from droplet-modified surfaces**
J. J. Horn, A. Watson, M. Lewis, T. McCreedy, J. D. Wadhawan, *Electrochem. Commun.*, **2008**, *10*, 1384-7.
52. **Anion-dependent micelle formation using electro-generated ferrocene surfactants**
L. A. Evans, D. Apreutesei, G. H. Mehl, J. D. Wadhawan, *ibid.*, **2008**, *10*, 1720-3.
53. **Electro-generated chemiluminescence at droplet-modified electrodes: towards biphasic pK_a measurement via proton-coupled electron transfer at liquid | liquid interfaces**
C. Lledo-Fernández, I. Hatay, M. J. Ball, G. M. Greenway, J. Wadhawan, *New J. Chem.*, submitted June 25, 2008, in press.
54. **Electrochemical determination of molecular anisotropy in molecularly-structured materials**
L. A. Evans, M. Thomasson, S. M. Kelly, J. Wadhawan, *J. Phys. Chem. C*, submitted July 17, 2008; under peer review.
55. **pH testing for detecting the position of nasogastric tubes in adults and children**
L. Shields, B. Elliott, J. Greenman, J. Wadhawan, J. Hall, S. V. Kalia, C. B. Imrie, M. El Habbal, D. N. Arabiat, V. Allgar, J. R. Aspland, *Cochrane Reviews*, in press.

Patent Families

1. **Catheter with a sensing region for redox reactions: determining correct positioning of a catheter**

J. Wadhawan, J. Greenman, M. El Habbal, L. Shields, C. Imrie, B. Elliott, 2006.
Published WO2007141579 and GB2438873(A)

2. **Determining gas concentration: membrane-covered sensor for determining the concentration of oxygen and carbon dioxide**

R. G. Compton, C. W. E. Hahn, P. J. Welford, J. D. Wadhawan, 2001.
Published as US2005016871, WO03029800(A3), WO03029800(A2), EP1444513(A3), EP1444513(A2), EP1444513(A0)