

## ***Dr Roger Bennett Publication List***

Peer Reviewed Journals

**2008**

1. "Oxidation States of Cr and Ti upon Adsorption of Cr on the TiO<sub>2</sub> Rutile (110) Surface" Michael Nolan, James S. Mulley and **Roger A. Bennett** in preparation.
2. "Adsorption, Orientation and Thermal Decomposition of Copper (II) Hexafluoroacetylacetonate on Rutile TiO<sub>2</sub>(110)" J.S. Mulley, R.A. Bennett and V. R. Dhanak, submitted to Surface Science.
3. "New insights on growth mechanisms of protein clusters at surfaces: an AFM and simulation study" D. Pellenc, **R.A. Bennett**, R.J. Green, M. Sperrin, M. Basham and P.A. Mulheran, Langmuir in press.
4. "Non-stoichiometric oxide and metal interfaces and reactions" **R.A. Bennett**, J.S. Mulley, M. Basham, M. Nolan, S.D. Elliott and P.A. Mulheran, Applied Physics A: Materials Science & Processing in press.
5. "Electronic Structure of Point Defects in Controlled self doping of the TiO<sub>2</sub>(110) surface: a combined photoemission spectroscopy and density functional theory study", M. Nolan, S. Elliott, J.S. Mulley, M. Basham, **R.A. Bennett** and P.A. Mulheran, Physical Review B 77 (2008) 235424.
6. "Mechanisms and dynamics of protein clustering on a solid surface" P.A. Mulheran, D. Pellenc, **R.A. Bennett**, R.J. Green, and M. Sperrin, Physical Review Letters 100 (2008) 068102..

**2007**

7. "Solving surface structures from normal incidence x-ray standing wave data", M. Basham and **R.A. Bennett**, Computer Physics Communications 177 (2007) 459, doi:10.1016/j.cpc.2007.05.006
8. "Spectroscopy of ultra-thin epitaxial rutile TiO<sub>2</sub>(110) films grown on W(100)", **R.A. Bennett**, J.S. Mulley, M.A. Newton and M. Surman, Journal of Chemical Physics 127 (2007) 084707
9. "The structure of adsorbed organometallic rhodium; model single atom catalysts.", **Roger A. Bennett**, Neil D. McCavish, Mark Basham, Vinod R. Dhanak and Mark A. Newton, Physical Review Letters 98 (2007) 056102 .

**2005**

10. "Model catalyst studies of the strong metal-support interaction: Surface structure identified by STM on Pd nanoparticles on TiO<sub>2</sub>(110)", Michael Bowker, Peter Stone, Peter Morrall, Rupert Smith, **Roger Bennett**, Neil Perkins, Ren Kvon, Chi Pang, Elodie Fourre and Matthew Hall, Journal of Catalysis, 234 (2005) 172-181.
11. "Non-stoichiometric oxide surfaces and ultra-thin films: characterisation of TiO<sub>2</sub>" **R.A. Bennett** and N.D. McCavish, Topics in Catalysis, 36 (2005), 11-19.
12. "Characterisation of protective coatings for planar automotive gas sensors", Stephen Poulston, **Roger A. Bennett**, Paolo Feraldi, Timothy Hyde, Marco F. Pidiria, Valerie Houel and Alison Wagland, Sensors and Actuators B 110 (2005) 209-217.

**2004**

13. "CO oxidation and the CO/NO reaction on Pd(110) studied using "fast" XPS and a molecular beam reactor", M. Bowker, **R.A. Bennett** and I.Z. Jones, Topics in Catalysis 28, (2004) 25-30.

**2003**

14. "Ultra-thin film growth of titanium dioxide on W(100)." N.D. McCavish and **R.A. Bennett**, Surface Science 546 (2003) 47-56.
15. "Ripening processes in supported and pinned nanoclusters – experiment, simulation and theory" **R.A. Bennett**, D.M. Tarr and P.A. Mulheran, Journal of Physics: Condensed Matter 15 (2003) S3139-S3152.
16. "Catalysis at the metal-support interface: exemplified by the photocatalytic reforming of methanol on Pd/TiO<sub>2</sub>", M. Bowker, D. James, P. Stone, **R.A. Bennett**, N. Perkins, L. Millard, J. Greaves and A. Dickinson, Journal of Catalysis 217 (2003) 427-433.

**2002**

17. "Measurement of the surface-growth kinetics of reduced TiO<sub>2</sub>(110) during re-oxidation using time-resolved scanning tunneling microscopy", R.D. Smith, **R.A. Bennett** and M. Bowker, Physical Review B 66 (3): art. no. 035409.
18. "Formic acid adsorption and decomposition on TiO<sub>2</sub>(110) and on Pd/TiO<sub>2</sub>(110) model catalysts" Michael Bowker, Peter Stone, **Roger Bennett** and Neil Perkins, Surface Science 511 (2002) 435-448.
19. "Titania surface structures for the directed growth of metal nanoparticles via metal and metal organic chemical vapour deposition", **R.A. Bennett**, M.A. Newton, R.D. Smith, J. Evans and M. Bowker, Materials Science and Technology 18 (2002) 710-716.
20. "Surface Structures in the SMSI state; Pd on (1×2) Reconstructed TiO<sub>2</sub>(110)" **R.A. Bennett**, C.L. Pang, N. Perkins, R.D. Smith, P. Murrall, R.I. Kwon and M. Bowker, Journal of Physical Chemistry B 106 (2002) 4688-4696.
21. "Strong and weak metal-support interactions on model Pd/TiO<sub>2</sub> catalysts." M. Bowker, **R. Bennett**, R. Smith, Abstracts of papers of the American Chemical Society 223 (2002) 028-COLL Part 1.
22. "CO adsorption on Pd/TiO<sub>2</sub>(110) model catalyst" Michael Bowker, Peter Stone, **Roger Bennett** and Neil Perkins, Surface Science 497 (2002) 155-165.

### 2001

23. "A comparative Scanning Tunnelling Microscopy (STM) Study of the adsorption of [Rh<sup>I</sup>(CO)<sub>2</sub>Cl]<sub>2</sub> on the (1×1) and (1×2) surfaces of TiO<sub>2</sub>(110) surfaces." **R.A. Bennett**, M.A. Newton, R.D. Smith, M. Bowker, and J. Evans, Surface Science 487 (2001) 223-230.
24. "Anisotropic spillover from elongated nanoparticles" M. Bowker, R.D. Smith and **R.A. Bennett** Surface Science 478 (2001) L309-L312.
25. "Scanning tunnelling microscopy studies of oxygen adsorption on Cu(111)", T. Matsumoto, **R.A. Bennett**, P. Stone, T. Yamada, K. Domen and M. Bowker, Surface Science 471 (2001) 225-245.
26. "STM observation of oxygen adsorption on Cu(111)", T. Matsumoto, **R.A. Bennett**, P. Stone, T. Yamada, K. Domen and M. Bowker, Studies in Surface Science and Catalysis 132 (2001) 773.
27. "The Flexible Surface or the Rigid Surface?", M. Bowker and **R.A. Bennett**, Topics in Catalysis, 14 (2001) 85.
28. "STM investigation and Monte-Carlo modelling of spillover in a supported metal catalyst" A.J. Ramirez-Cuesta, **R.A. Bennett**, P. Stone and P.C.H. Mitchell and M. Bowker, Journal of Molecular Catalysis A: Chemical 167 (2001) 171-179.

### 2000

29. "Room temperature formation of Rh nanoparticles on TiO<sub>2</sub>(110) via MetalOrganic chemical-Vapour Deposition (MOCVD) of [Rh(CO)<sub>2</sub>Cl]<sub>2</sub>", M.A. Newton, **R.A. Bennett**, R.D. Smith, J. Evans and M. Bowker Chemical Communications, 2000, 1677-1678.
30. "The re-oxidation of the substoichiometric TiO<sub>2</sub>(110) surface in the presence of crystallographic shear planes" **R.A. Bennett**, Physical Chemistry Communications, (2000) 3. ([www.rsc.org/cj/qu/2000/B001938K/index.htm](http://www.rsc.org/cj/qu/2000/B001938K/index.htm))
31. "In Consideration of Precursor States, Spillover and Boudart's 'Collection Zone' and their Role in Catalytic Processes", M. Bowker, L. Bowker, **R.A. Bennett**, P. Stone and A. Ramirez-Cuesta, Journal of Molecular Catalysis A: Chemical 163 (2000) 221-232.
32. "Formic acid Adsorption and Decomposition on non stoichiometric TiO<sub>2</sub>(110)", **R.A. Bennett**, P. Stone, R. Smith and M. Bowker, Surface Science 454/456 (2000) 390.

### 1999

33. "Scanning Tunnelling Microscopy Studies of the Reactivity of the TiO<sub>2</sub>(110) surface: Re-oxidation and the Thermal treatment of Metal Nano-particles", **R.A. Bennett**, P. Stone and M. Bowker, Faraday Discussions 114 (1999) 267.
34. "Pd nanoparticle enhanced re-oxidation of TiO<sub>2</sub> support material; imaging of spillover and a new form of SMSI", **R.A. Bennett**, P. Stone and M. Bowker, Catalysis Letters 59 (1999) 99.
35. "Two (1×2) reconstructions of TiO<sub>2</sub>(110); surface rearrangement and reactivity studied using elevated temperature STM" **R.A. Bennett**, P. Stone, N.J. Price and M. Bowker, Physical Review Letters 82 (1999) 3831.

36. "CO oxidation on Pd(110); A high resolution XPS and molecular beam study" I.Z. Jones, **R.A. Bennett** and M. Bowker, *Surface Science* 439 (1999) 235.
37. "Reactive re-oxidation of reduced TiO<sub>2</sub>(110) demonstrated by high temperature STM", P. Stone, **R.A. Bennett** and M. Bowker, *New Journal of Physics* vol. 1, no. 8 (1999) ([www.njp.org](http://www.njp.org)).
38. "High resolution XPS study of ethanol oxidation reaction on Pd(110)" R.P. Holroyd, **R.A. Bennett**, I.Z. Jones and M. Bowker, *Journal of Chemical Physics* 110 (1999) 8703.
39. "The Growth Mechanism, Thermal Stability and Reactivity of Palladium Mono and Multilayers on Cu(110)", J.P. Reilly, C.J. Barnes, N.J. Price, **R.A. Bennett**, S. Poulston, P. Stone and M. Bowker, *Journal of Physical Chemistry B* 103 (1999) 6521.
40. "Scanning tunnelling microscopy and Auger electron spectroscopy study of Pd on TiO<sub>2</sub>(110)" P. Stone, **R.A. Bennett**, S. Poulston and M. Bowker, *Surface Science* 433-435 (1999) 501.
41. "Morphology of Pd multilayers on Cu(110)" **R.A. Bennett**, S. Poulston, N.J. Price, J.P. Reilly, P. Stone, C.J. Barnes and M. Bowker, *Surface Science* 433-435 (1999) 816.
42. "Reply to comment on 'Gross re-arrangement of metal atoms during surface reactions'" M. Bowker and **R.A. Bennett**, *Journal of Physics Condensed Matter* 11 (1999) 7667.
43. "A LEED and STM study of crystallographic shear plane termination on a reduced TiO<sub>2</sub>(110) surface" **R.A. Bennett**, S. Poulston, P. Stone and M. Bowker, *Physical Review B* 59 (1999) 10341.

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44. "Insights into surface reactivity: formic acid oxidation on Cu(110) studied using STM and molecular beam reaction" M. Bowker, **R.A. Bennett**, S. Poulston and P. Stone, *Catalysis Letters* 56 (1998) 77.
45. "Gross rearrangement of metal atoms during surface reactions" M. Bowker, S. Poulston, **R.A. Bennett** and P. Stone, *Journal of Physics Condensed Matter* 10 (1998) 7713.
46. "An STM, TPD and XPS investigation of formic acid adsorption on the oxygen precovered c(6×2) surface of Cu(110)" P. Stone, S. Poulston, **R.A. Bennett**, N.J. Price and M. Bowker, *Surface Science* 418 (1998) 71.
47. "Scanning tunnelling microscopy investigation of sintering in a model supported catalyst: nanoscale Pd on TiO<sub>2</sub>(110)." P. Stone, S. Poulston, **R.A. Bennett** and M. Bowker, *Chemical Communications* (1998) 1369.
48. "Shedding light on surface reactions: CO oxidation on Pd(110)" M. Bowker, I.Z. Jones, **R.A. Bennett**, F. Esch, A. Baraldi, S. Lizzit, G. Comelli, (1998) *Catalysis Letters*, 51 (1998) 187.
49. "High temperature scanning tunnelling microscopy studies of oxygen induced reconstructions of Pd(110)" **R.A. Bennett**, S. Poulston, I.Z. Jones and M. Bowker, *Surface Science*, 401 (1998) 72.
50. "Elevated temperature STM study of formic acid adsorption and reaction on oxygen (2×1) covered Cu(110)" **R.A. Bennett**, S. Poulston and M. Bowker, *Journal of Chemical Physics* 108 (1998) 6916.
51. "CO adsorption on Pd(110)" I.Z. Jones, **R.A. Bennett** and M. Bowker, *Surface Science* 402-404 (1998) 595.
52. "A combined STM/Molecular beam study of formic acid oxidation on Cu(110)" M. Bowker, S. Poulston, **R.A. Bennett**, P. Stone, A.H. Jones, S. Haq, and P. Hollins, *Journal of Molecular Catalysis A: Chemical* 131 (1998) 185.
53. "CO oxidation on Pd(110)" M. Bowker, I.Z. Jones, **R.A. Bennett** and S. Poulston, in "Catalysis and Automotive Pollution Control" (N. Kruse, A. Frennet and J-M, Bastin, eds.) Elsevier, Amsterdam vol. 116 (1998) 431.

### 1997

54. "A comparative study of the photodissociation of physisorbed O<sub>2</sub> on Pt(111) and graphite surfaces" L. Šiller, S.L. Bennett, H.M. Crabtree, **R.A. Bennett**, J. Wilkes, C.L.A. Lamont, M.A. MacDonald, R.E. Palmer and J.S. Foord, *Journal of Physics: Condensed Matter* 9 (1997) 5815.
55. "Identifying molecular species in STM images" S. Poulston, A.H. Jones, **R.A. Bennett** and M. Bowker, *Journal of Physics: Condensed Matter* 9 (1997) 8791.
56. "STM study of formic acid adsorption on Cu(110)" S. Poulston, **R.A. Bennett**, A.H. Jones and M. Bowker, *Physical Review B Condensed Matter* 55 (1997) 12888.

57. "An STM investigation of formic acid adsorption on oxygen precovered Cu(110)" S. Poulston, A. Jones, **R.A. Bennett** and M. Bowker, *Surface Science* 377 (1997) 66.
58. "Methanol oxidation to formate on Cu(110) studied by STM" A.H. Jones, S. Poulston, **R.A. Bennett** and M. Bowker, *Surface Science* 380 (1997) 31.
59. "Controlling reaction selectivity in the oxidation of methanol at Cu(110) surfaces -Comment" M. Bowker, S. Poulston, **R.A. Bennett** and A.H. Jones, *Catalysis Letters* 43 (1997) 267.

#### **1996 or before**

60. "Contrasting reaction pathways in methanol oxidation on Cu(110) studied by STM" S. Poulston, A.H. Jones, **R.A. Bennett** and M. Bowker, *Journal of Physics: Condensed Matter*, 8 (1996) L765.
61. "Surface enhanced photodissociation of physisorbed molecules" L. Šiller, S.L. Bennett, **R.A. Bennett**, R.E. Palmer and J.S. Foord, *Physical Review Letters* 76 (1996) 1960.
62. "Mechanistic studies of the photodissociation of physisorbed O<sub>2</sub> / graphite" **R.A. Bennett**, S.L. Bennett, L. Šiller, M.A. MacDonald, R.E. Palmer, H.M. Wright and J.S. Foord, *Journal of Physics: Condensed Matter* 6 (1994) 1955-1964.
63. "Electron and Photon Stimulated Desorption of Negative Ions from Oriented Physisorbed Molecules" R.J. Guest, **R.A. Bennett**, L.A. Silva, R.G. Sharpe, J.C. Barnard, R.E. Palmer and M.A. MacDonald, *Springer Series in Surface Sciences*, Vol. 31 "Desorption Induced by Electron Transitions DIET V", Editors: A.R. Burns, E.B. Stechel and D.R. Jennison (1993).
64. "Resonant substrate-mediated photodissociation of adsorbed molecules: O<sub>2</sub> / graphite" **R.A. Bennett**, R.G. Sharpe, R.J. Guest, J.C. Barnard and R.E. Palmer, *Chemical Physics Letters* vol. 198 no. 1,2 (1992) 241.

#### **Other Publications**

65. "Metal organic chemical vapour deposition (MOCVD) and the adsorbed structure of single atom catalysts", *Synchrotron Radiation Department Annual Report, CCLRC, 2005-2006*.
66. "Time Lapse Imaging of Surface Reaction Reveals Re-oxidation Mechanism of Titania" *Research Matters, Oxford Instruments PLC, issue 10, Spring (1999)*.