Publication List – J David Carey

2007

1. **(invited)** Clustering in Nanostructured Carbon: Evidence of Electron Delocalization, **J. David Carey** and Simon Henley, *Diam. Relat. Mater.* **16**, 1782 (2007).

2. *Ab initio* investigation of molecular hydrogen physisorption on graphene and carbon nanotubes, Daniel Henwood and **J. David Carey**, *Phys. Rev. B* **75**, 245413 (2007).

3. **(invited)** Surface morphology and evolution of amorphous carbon thin films, Simon Henley, Ravi Silva and **David Carey**, *Diam. Relat. Mater.* **16**, 1777 (2007).

4. Metal nanoparticle production by pulsed laser nanostructuring of thin metal films, S.J. Henley, **J.D. Carey** and S.R.P. Silva, *Appl. Surf. Sci.* **253**, 8080 (2007).

5. Temperature Dependent Thermal Conductivity of Carbon Nanotube/Epoxy Composites, Michael B. Jakubinek, Mary Anne White, Paul C. P. Watts, **David Carey**, *Mater. Res. Soc. Symp.* **1022**, II03-06 (2007).

6. Electronic properties of carbon nanowires, Amit Kumar, D. K. Avasthi, A. Tripathi, L. D. Filip, **J. D. Carey** and J. C. Pivin, *J. Appl. Phys.* **102**, 044305 (2007).

7. Electrical conduction and transmission coefficients of suspended multiwalled carbon nanotubes, Gemma Kerr, Paul Smith, **David Carey** and Ravi Silva, *Nanotechnology* **18,** 295203 (2007).

8. Control of ZnO nanorod array density by Zn supersaturation variation and effects on field emission, Kumar R Rajendra, E McGlynn, C McLoughlin, S Chakrabarti, R. C. Smith, **J.D. Carey**, J-P Mosnier and M Henry, *Nanotechnology* **18**, 215704 (2007).

9. Encapsluation of Co and Pd multi-metal nanowires inside multiwalled carbon nanotubes by microwave plasma chemical vapor deposition, Yasuhiko Hayashi, T. Fujita, T. Tokunaga, K. Kaneko, T. Butler, N. Rupesinghe, **J.D. Carey**, S.R.P. Silva and G.A.J. Amaratunga, *Diam. Relat. Mater.* **16**, 1200 (2007).

10. The importance of oxygen-containing defects on carbon nanotubes for the detection of polar and non-polar vapours through hydrogen bond formation, Paul C P Watts, Natacha Mureau, Zhenni Tang, Yoji Miyajima, **J David Carey** and S Ravi P Silva, *Nanotechnology* **18**, 175701 (2007).

11. Observation of van der Waals driven self-assembly of MoSI nanowires into a low-symmetry structure using aberration-corrected electron microscopy, V. Nicolosi, P. D. Nellist, S. Sanvito, E. C. Cosgriff, S. Krishnamurthy, W. J. Blau, M. L. H. Green, D. Vengust, D. Dvorsek, D. Mihailovic, G. Compagnini, J. Sloan, V. Stolojan, **J. D. Carey**, S. J. Pennycook, J. N. Coleman, *Adv. Mater.* **19**, 543 (2007).

2006

12. **(invited)** Nanostructured materials for field emission devices, **J.D. Carey** and S.R.P. Silva, CRC Handbook on Nanomaterials, Ed. Y. Gogotsi, pp 665 – 684 (January 2006).

13. Quantifying clustering in disordered carbon thin films, **J. D. Carey**, *Thin Solid Films* **515**, 996 (2006).

14. **(invited)** Effects of nanoscale clustering in amorphous carbon, David Carey and Ravi Silva, Carbon: The Future Material for Advanced Technology Applications, Springer Series Topics in Applied Physics, volume 100, pp 131-145 (March 2006).

15. Silver nanoparticle decorated carbon nano-scaffolds: Application as a sensing platform, S.J. Henley, **J.D. Carey** and S.R.P. Silva, *Appl. Phys. Lett.* **89**, 183120 (2006).

16. *In-situ* electrode manipulation for three terminal field emission characterisation of individual carbon nanotubes, R.C. Smith, **J.D. Carey**, D.C. Cox and S.R.P. Silva, *Appl. Phys. Lett.* **89**, 063111 (2006).

17. Laser-nanostructured Ag films as substrates for surface-enhanced Raman spectroscopy, S.J. Henley, **J.D. Carey** and S.R.P. Silva, *Appl. Phys. Lett.* **88**, 081904 (2006).

18. **(invited)** Carbon based electronic materials: applications in electron field emission, **J.D. Carey**, R.C. Smith, and S.R.P. Silva, *Journal of Materials Science - Materials in Electronics* **17**, 405 (2006).

19. Microstructure Analyses of Metal-Filled Carbon Nanotubes Synthesized by Microwave Plasma-Enhanced Chemical Vapor Deposition, Yasuhiko Hayashi, Tomoharu Tokunaga, Kenji Kaneko, Simon J. Henley, Vlad Stolojan, **J. David Carey** and S. R. P. Silva, *IEEE Trans. Nanotechnology* **5**, 485 (2006).

20. Bandgap enhancement of layered nanocrystalline silicon from excimer laser crystallization, A. A. D. T. Adikaari, **J. D. Carey**, V Stolojan, J L Keddie and S R P Silva, *Nanotechnology* **17**, 5412 (2006).

21. Damage effects in Pyrex by CF_4 reactive ion etching in dual RF-microwave plasmas, D.A. Zeze, **J.D. Carey**, V. Stolojan, B.L. Weiss and S.R.P. Silva, *Micro. Nano. Lett.* **1**, 103 (2006).

2005

22. Charge transport effects in field emission from carbon-nanotube polymer composites, R.C. Smith, **J.D. Carey**, R.J. Murphy, W.J. Blau, J.N. Coleman and S.R.P. Silva, *Appl. Phys. Lett.* **87**, 263105 (2005).

23. **(invited)** Developments in nanotechnology and nanomaterials in pharmaceutical science, **David Carey**, *European Journal of Parenteral and Pharmaceutical Science* **10**, 15 (2005).

24. Pulsed-laser-induced nanoscale island formation in thin metal-on-oxide films, S.J. Henley, **J.D. Carey** and S.R.P. Silva, *Phys. Rev. B* **72**, 195408 (2005).

25. Dynamics of confined plumes during short and ultrashort pulsed laser ablation of graphite, S. J. Henley, **J.D. Carey**, S. R. P. Silva, G. M. Fuge, M. N. R. Ashfold and D. Anglos, *Phys. Rev. B* **72**, 205413 (2005).

26. Electron field emission from carbon based materials, S.R.P. Silva, **J. D. Carey**, X. Guo, W.M. Tsang and C.H.P. Poa, *Thin Solid Films* **482**, 79 (2005).

27. Interpretation of enhancement factor in non-planar field emitters, R. C. Smith, R. D. Forrest, **J. D. Carey**, W. K. Hsu and S. R. P. Silva, *Appl. Phys. Lett.* **87**, 013111 (2005).

28. The effects of aspect ratio and anode location on the field emission properties of nanotubes, R.C. Smith, **J. D. Carey**, R.D. Forrest and S.R.P. Silva, *J. Vac. Sci. Technol. B* **23**, 632 (2005).

29. Lattice Location of Rare Earth Ions in Semiconductors: Interpretation and Limitations of using g values, **David Carey**, *Mater. Res. Soc. Symp.* **866**, V6.7 (2005).

30. Metal incorporation into nanoporous carbon, S.J Henley, N.E.P. Woolger, **J.D. Carey**, S.R.P. Silva, G. M. Fuge and M.N.R. Ashfold, *Mater. Res. Soc. Symp.* **876E**, R10.3.1 (2005).

31. Dendrimer assisted catalytic growth of mats of multiwall carbon nanofibers, E. Mendoza, S.J. Henley, C.H.P. Poa, V. Stolojan, G.Y. Chen, C.E. Giusca, **J. D. Carey** and S.R.P. Silva, *Carbon* **43**, 2229 (2005).

32. Large area growth of carbon nanotube arrays for sensing platforms, E. Mendoza, S.J. Henley, C.H.P. Poa, G.Y. Chen, C.E. Giusca, A.A.D.T. Adikaari, **J.D. Carey**, and S.R.P. Silva, *Sensors and Actuators B* **109**, 75 (2005).

2004

33. Disorder, clustering, and localization effects in amorphous carbon, **J. D. Carey** and S. R. P. Silva, *Phys. Rev. B* **70**, 235417 (2004).

34. Nanoengineering of materials for field emission display technologies, S. R. P. Silva, **J. D. Carey**, G. Y. Chen, D. C. Cox, R. D. Forrest, C. H. Poa, R. C. Smith, Y. F. Tang and J. M. Shannon, *IEE Proc. Circuits Devices Systems* **151**, 489 (2004).

35. Formation of three dimensional Ni nanostructures for large area catalysts, **J.D. Carey**, S.J. Henley, E. Mendoza, C.E. Giusca, A. A. D. T. Adikaari and S.R.P. Silva, *Mat. Res. Soc. Symp.* **820**, 357 (2004).

36. Electron field emission from room temperature grown carbon nanofibres, R. C. Smith, **J. D. Carey**, C. H. P. Poa, D. C. Cox and S. R. P. Silva, *J. Appl. Phys.* **95**, 3153 (2004).

37. Excimer laser nanostructuring of nickel thin films for the catalytic growth of carbon nanotubes, S. J. Henley, C. H. P. Poa, A. A. D. T Adikaari, C. E. Giusca, **J. D. Carey** and S. R. P. Silva, *Appl. Phys. Lett.* **84**, 4035 (2004).

38. Room temperature photoluminescence from nanostructured amorphous carbon, S.J. Henley, **J.D. Carey** and S.R.P. Silva, *Appl. Phys. Lett.* **85**, 6236 (2004).

2003

39. **(invited)** Engineering the next generation of large-area displays: prospects and pitfalls, **J.D. Carey**, *Phil. Trans. Roy. Soc. A* **361**, 2891 (2003).

40. Formation of low temperature self-organized nanoscale nickel metal islands, **J.D. Carey**, L.L Ong and S.R.P. Silva, *Nanotechnology* **14**, 1223 (2003).

41. An EPR study at X- and W-band of defects in a-C:H films in the temperature range 5K - 300 K, B.J. Jones, R.C. Barklie, G. Smith, H. El Mkami, **J.D. Carey** and S.R.P. Silva, *Diam. Relat. Mater.* **12**, 116 (2003).

42. Enhancing the electrical conduction in amorphous carbon and prospects for device applications, S.R.P. Silva and **J.D. Carey**, *Diam. Relat. Mater.* **12**, 151 (2003).

43. Effects of ion implantation of electron centers in hydrogenated amorphous carbon, A. A. Konchits, M. Ya. Valakh, B.D. Shanina, S.P. Kolesnik, I.B. Yanchuk, **J.D. Carey**, and S.R.P. Silva, *J. Appl. Phys.* **93**, 5905 (2003).

44. Role of nanostructure on the electron field emission from amorphous carbon thin films, **J.D. Carey**, R.D. Forrest, C.H. Poa and S.R.P. Silva, *J. Vac. Sci. Technol. B* **21**, 1633 (2003).

2002

45. Amorphous carbon thin films, S.R.P. Silva, **J.D. Carey**. R.U.A. Khan, E.G. Gerstner and J.V. Anguita, Chapter 9, Volume 4, in Handbook of Thin Films, ed. H. S. Nalwa (Academic Press, New York), pp. 403-506, 2002.

46. Structure of multi-oxygen related defects in erbium implanted silicon, **J. D. Carey**, *J.Phys.: Condens. Matter* **14**, 8537 (2002).

47. Reactive ion etching of quartz and Pyrex for microelectronic applications, D.A. Zeze, R.D. Forrest, **J.D. Carey**, D.C. Cox, I.D. Robertson, B.L. Weiss, and S.R.P. Silva, *J. Appl. Phys.* **92**, 3624 (2002).

48. Inhibition of the surface levelling of thermosetting polysetting powder coatings caused by surface tension gradients, Y. Zhao, **J.D. Carey**, N. Knoops, D. Maetens, I. Hopkinson, J.N. Hay, and J.L. Keddie, *J. Mat. Sci.* **37**, 4759 (2002).

49. Solid state nuclear magnetic resonance studies of amorphous carbon thin films, **J.D. Carey**, EMIS Datareviews series no. 29, Properties of Amorphous Carbon, Ed. S.R.P. Silva, IEE London, 2002 pp. 103-110.

50. Amorphous carbon based microelectromechanical systems (MEMS), **J.D. Carey**, EMIS Datareviews series no. 29, Properties of Amorphous Carbon, Ed. S.R.P. Silva, IEE London, 2002 pp.339-341.

51. Amorphous carbon films for electron injection into organic light emitting diodes, S.R.P. Silva and **J.D. Carey**, EMIS Datareviews series no. 29, Properties of Amorphous Carbon, Ed. S.R.P. Silva, IEE London, 2002 pp. 352-354.

52. ESR and Raman characterisation of ion implanted hydrogenated amorphous carbon thin films, M. Valakh, A. Konchits, B. Shanina, S. Kolesnik, I. Yanchuk, **D. Carey** and R. Silva, *Third Forum on New Materials – Part IV* (Techna Srl., Faenza, Italy) 2002 pp. 115-122.

2001

53. Conditioning of hydrogenated amorphous carbon thin films for field emission via current stressing, **J. D. Carey** and S.R.P. Silva, *Appl. Phys. Lett.* **78**, 347 (2001).

54. Electron delocalisation in amorphous carbon by ion implantation, R. U. A. Khan, **J. D. Carey**, S.R.P. Silva, B.J. Jones and R.C. Barklie, *Phys. Rev. B* **63**, 121201(R) (2001).

55. Current induced conditioning of a-C:H films for field emission, **J. D. Carey** and S.R.P. Silva, *Diam. Relat. Mater.* **10**, 837 (2001).

56. Electron paramagnetic resonance study of ion implantation induced defects in amorphous hydrogenated carbon, B.J. Jones, R.C. Barklie, R.U.A. Khan, **J.D. Carey**, and S.R.P. Silva, *Diam. Relat. Mater.* **10**, 993 (2001).

57. Origin of electric field enhancement in field emission from amorphous carbon thin films, **J. D. Carey**, R. D. Forrest and S. R. P. Silva, *Appl. Phys. Lett.* **78**, 2339 (2001).

58. Conditioning of amorphous cathodes via current stressing, S.R.P. Silva, **J.D. Carey**, C.H. Poa and J.M. Shannon, Cold Cathodes, Proceedings from the First International Symposium on Cold Cathodes, Eds. M. Cahay, K.L. Jensen, P.D. Mumford, J. Yater, R.A. Murphy, D. Temple and V.J. Kapoor, The Electrochemical Society, vol. 2000-28, pp. 226-246 (2001).

2000

59. Modification of electron field emission properties from surface treated amorphous carbon thin films, **J.D. Carey**, C.H. Poa, R.D. Forrest, A.P. Burden, and S.R.P. Silva, *J. Vac. Sci. Tech. B* **18**, 1051 (2000).

60. EPR study of defects in thin films of hydrogenated amorphous carbon grown by PECVD, M. Collins, R.C. Barklie, J.V. Anguita, **J.D. Carey**, and S.R.P Silva, *Diam. Relat. Mater.* **9**, 781(2000).

61. Amorphous semiconductors for cold cathodes: A route to large-area flat-panel displays, S. R. P. Silva, **J. D. Carey** and R. D. Forrest, *Journal of the Society for Information Display* **8**, 17 (2000).

62. Influence of sp^2 clusters on the field emission properties of amorphous carbon thin films, **J. D. Carey**, R. D. Forrest, R.U.A. Khan, and S.R.P. Silva, *Appl. Phys. Lett.* **77**, 2006 (2000).

63. Electron field emission from amorphous semiconductors, **J.D. Carey** and S.R.P. Silva, *Solid State Elect.* **45**, 1017 (2001).

- 1999

64. Electron paramagnetic resonance and photoluminescence study of Er-Impurity Complexes in Si, **J. D. Carey**, R. C. Barklie, J. F. Donegan, F. Priolo, G. Franzò, and S. Coffa, *Phys. Rev. **B 59**, 2773 (1999).*

65. Structure of Er-related centers in Si, **J.D. Carey** and F. Priolo, *Physica B* **273-274**, (1999) 350.

66. EPR study of erbium-impurity complexes in silicon, **J.D. Carey**, R.C. Barklie, J. F. Donegan, F. Priolo, G. Franzò and S. Coffa, *J. Lumin.* **80**, 297 (1998).

67. Electron paramagnetic resonance of erbium doped silicon, **J. D. Carey**, J. F. Donegan, R. C. Barklie, F. Priolo, G. Franzò, and S. Coffa, *Appl. Phys. Lett.* **69**, 3854 (1996).

68. The erbium-impurity interaction and its effects on the 1.54 μm luminescence of Er^{3+} in crystalline silicon, F. Priolo, G. Franzò, S. Coffa, A. Polman, S. Libertino, R. Barklie, and **D. Carey**, *J. Appl. Phys.* **78**, 3874 (1995).

69. Large Barkhausen effect and coupling factors in Fe-rich amorphous wires, **J. D. Carey**, M. D. Hickmott, H. T. Savage, C. Gomez-Polo, and M. Vazquez, J.B. Blanco, and J. Gonzalez, Trends in Non-crystalline Solids, Eds. A. Conde, C.F. Conde and M. Millan, (World Scientific, Singapore, 1992), pp.425-428.

Invited Conference Presentations and Departmental Seminars

1. Carbon Nanotube - Polymer Composites: Application as Field Emission Cathodes, David Carey, Materials Research Society, Spring meeting, San Francisco, April 2007.

2. Nanomaterials in Action: Engineering and Applications of Carbon Nanotubes, University of Ulster, February 2007.

3. Nanotechnology in Action: Designing Carbon Nanotube Cathodes, Dublin City University, October 2006.

4. Clustering in Amorphous and Nanostructured Carbon, David Carey, 6th Specialist meeting of Amorphous Carbon, Heraclion, Crete, September 2006.

5. Carbon based electronics, Department of Chemistry, Imperial College London, November 2005.

6. Carbon as an electronic material, Materials Institute, Sheffield Hallam University, May 2005.

7. Diamond-like Carbon Thin Films, Physics Department, University of Exeter, March 2003.

8. Enhancing the electrical conductivity of amorphous carbon thin films and prospects for device applications, J.D. Carey and S.R.P. Silva, 4th Specialist meeting of Amorphous Carbon, Barcelona, September 2002.

9. Role of the sp^2 clusters field emission from amorphous carbon thin films, Invited paper at EuroFE2000, Segovia, Spain, September 2000.

10. Conditioning of amorphous cathodes via current stressing, Invited paper from the First International Symposium on Cold Cathodes, 198th meeting of The Electrochemical Society, Phoenix Arizona, November 2000.

11. Electron field emission from amorphous semiconductors, Invited paper at EuroFE99, Toledo, Spain, November 1999.

12. Amorphous semiconductors for cold cathodes: A route to large area flat panel displays, invited paper from IURMS-ICAM99 (Beijing 1999), Published in the Journal of the Society for Information Display, 8 (2000) 17.