

FULL LIST OF PUBLICATIONS

Professor Julian Gardner

BSc PhD DSc FIET FIEEE FREng

School of Engineering,

University of Warwick, UK

E-Mail: j.w.gardner@warwick.ac.uk

Website: www.warwick.ac.uk/MBL



(H-index of 71, i10-index 234 & 20,981 citations from Google Aug 2022)

I. BOOKS, EDITED BOOKS & BOOK CHAPTERS

1. Book chapter: Guha P, Santra S and **Gardner JW** (2020) in *Semiconductor Gas Sensors 2nd edition* (Eds. R. Jaaniso et al.), Ch 15 pp465-487, Woodhead Publishing. “Integrated CMOS-based sensors for gas and odour detection” ISBN: 9780081025598
2. Book chapter: **Gardner JW** and Guha P (2020) in *Advanced Nanomaterials for Inexpensive Gas Microsensors*, Llobet (Ed) Ch7, pp125-141. Advanced Nanomaterials Series, Elsevier “CMOS based resistive and FET devices for smart gas sensors”
3. Book chapter: de Luca A, Udrea F, **Gardner JW** et al. (2016) in *Semiconductor Devices in Harsh Conditions*, Weide-Zaage and Chrzanowska-Jeske (Eds), Ch5, pp87-107, CRC Press, Delaware. “Sensors and Sensor Systems for Harsh Environment Applications”
4. Book chapter: Vincent TA, Wilson A, Hattersley JG, Chappell MJ, **Gardner JW** (2016) in *IWBIO 2016*, LNBI 9656, pp. 13–21. Ortuño D and Rojas I (Eds), Springer International Publishing, Switzerland. DOI: 10.1007/978-3-319-31744-1_2
5. Book chapter: Pearce TC, Karout S, Capurro A, Racz Z, Cole M, **Gardner JW** (2013) in *Biomimetic and Biohybrid Systems*, Lepora NF et al (eds), Vol. 8064, pp 204-215, Springer, Berlin “Robust ratiometric infochemical communication in a neuromorphic synthetic moth”
6. Book chapter: Guha P, Santra S and **Gardner JW** (2013) in *Measurement, Instrumentation and Sensors Handbook*, Taylor and Francis, Ch 9 “CMOS integrated gas sensors”
7. Book chapter: Guha P, Santra S and **Gardner JW** (2013) in *Semiconductor Gas Sensors* (Eds. R. Jaaniso, Z. Weiguang and T. Kiang), Ch 15 “Integrated semiconductor sensors for gas and odour detection”
8. Book chapter: **Gardner JW**, Covington JA and Che Harun F (2012) in *Human Olfactory Displays and Interfaces: Odor Sensing and Presentation*, T. Nakamoto (Ed.), IGI Global, USA, Ch 12, pp257-274 “Electronic mucosa: a natural successor to the electronic nose system?”
9. Book chapter: Pearce TC, Sanchez-Montanes MA and **Gardner JW** 2009, *Springer series, Ch5, pp75-92*, “Improved odour detection through imposed biomimetic temporal dynamics”
10. Edited book: **Gardner JW** (2007) *Proc. of the 25th IASTED International Multi-conference Biomedical Engineering*, 13-15 Feb. 2007, IASTED, Canada, pp468. ISBN 978-0-88986-648-5
11. Authored book (Chinese edition): **Gardner JW**, Varadan VJ and Awadelkarim O (2006) *Microsensors, MEMS and Smart Devices*, Tsinghua University Press, Beijing, pp503. ISBN 7-302-08122-0.
12. Edited book (Chinese translation): Hesse J, **Gardner JW** and Göpel W (2005) *Sensors in Household Appliances*, Sensors Applications, Volume 5, Wiley-VCH, Weinheim, pp244. ISBN 7-5025-5446-7.
13. Book chapter: Brezmes J, Llobet E, Al-Khalifa S, Maldonado S and **Gardner JW**, in *Support Vector Machines: Theory and Applications*, Lipo W (Ed) "Support Vector Machine: Theory and

- Applications Chapter: Gas Sensing Using Support Vector Machines", Studies in Fuzziness and soft computing, Springer-Verlag, Berlin, ISBN 3-540-24388-7, June, 2005.
14. Book chapter: Dutta R, **Gardner JW** and Hines EL 2005 *Encyclopaedia of Sensors* (<http://www.aspbs.com/eos>), American Scientific Publishers, May 2005 "Object-orientated expert electronic nose system"
 15. Edited book: **Gardner JW** and Yinon J (2004) *Electronic Noses and Sensors for the Detection of Explosives*, NATO Science Series II Mathematics, Physics and Chemistry – Vol.159, Kluwer, Dordrecht, pp324. ISBN 1-4020-2317-0 (hardbound) and 1-4020-2318-9 (paperback).
 16. Edited book: Hesse J, **Gardner JW** and Göpel W (2004) *Sensors in Medicine and Health Care*, Sensors Applications, Volume 3, Wiley-VCH, Dordrecht, ISBN 3-527-29556-9.
 17. Book chapter: **Gardner JW** in *Electronic Noses & Sensors for the Detection of Explosives* (Eds **JW Gardner** and J Yinon), NATO Science Series II Mathematics, Physics and Chemistry – Vol.159, Kluwer, Dordrecht, 2004, pp.1-28, ISBN 1-4020-2317-0 & ISBN 1-4020-2318-9. "Review of conventional electronic noses and their possible application to the detection of explosives"
 18. Edited book: Pearce TC, Schiffman SS, Nagle HT, **Gardner JW** (2003) *Handbook of Machine Olfaction*, Wiley-VCH, Dordrecht, pp592. ISBN 3-527-30358-8.
 19. Edited book: Hesse J, **Gardner JW** and Göpel W (2003) *Sensors for Automotive Technology*, Sensors Applications, Volume 4, Wiley-VCH, Dordrecht, pp560. ISBN 3-527-29553-4.
 20. Edited book: Hesse J, **Gardner JW** and Göpel W (2003) *Sensors in Household Appliances*, Sensors Applications, Volume 5, Wiley-VCH, Weinheim, pp287. ISBN 3-527-30362-6.
 21. Book chapter: Hines EL, Boilot P, **Gardner JW**, and Gongora MA in *Handbook of Machine Olfaction* (Eds. TC Pearce, S Schiffman, T Nagle T, JW Gardner), Wiley-VCH, pp.133-160, ISBN 3-527-30358-8, January 2003. "Pattern analysis for electronic noses"
 22. Book chapter: **Gardner JW** and Cole M in *Handbook of Machine Olfaction* (Eds. TC Pearce, S Schiffman, T Nagle T, JW Gardner), Wiley-VCH, pp.231-266, ISBN 3-527-30358-8, January 2003. "Integrated e-nose and Microsystems for chemical analysis"
 23. Book chapter: Jacesko SL, Ji T, Abraham JK, Varadan VJ, and **Gardner JW** in *Smart Structures and Materials 2003* (Eds. VK Varadan, LB Kish), Proceedings of SPIE Vol. 5055, pp.147-153. "Design of a micro fluidic cell using microstereolithography for electronic tongue applications"
 24. Edited book: Nagle T, Gardner JW and Persaud KC (2002) *Special Issue on Artificial Olfaction*, IEEE Sensors Journal, Volume 2, 131-271. ISSN 1530-437X.
 25. Edited book: Hesse J, **Gardner JW** and Göpel W (2001) *Sensors in Intelligent Buildings*, Sensors Applications, Volume 2, Wiley-VCH, Dordrecht, pp586. ISBN 3-527-29557-7.
 26. Edited book: Hesse J, **Gardner JW** and Göpel W (2001) *Sensors in Manufacturing*, Sensors Applications, Vol. 1, Wiley-VCH, Dordrecht, pp395. ISBN 3-527-29558-5.
 27. Authored book: **Gardner JW**, Varadan VJ and Awadelkarim O (2001) *Microsensors, MEMS and Smart Devices*, John Wiley & Sons Ltd, Chichester, pp552. ISBN 0-471-86109-X.
 28. Book chapter: **Gardner JW** and Chetwynd DG 2001" in *Metrology and Properties of Engineering Surfaces*, eds E Mainsah, JA Greenwood, DG Chetwynd, Kluwer Academic Publishers, London, Ch 11, pp361-386, ISBN 0-412-80640-1, "Thin-film conducting polymer bearings".
 29. Book chapter: Al-Khalifa S, **Gardner JW** and Maldonado-Bascón S 2001 in *Sensors and their Applications XI*, (Eds K.T.V. Grattan & S.H. Khan), Series in Sensors, (Series Ed. B.E. Jones), IOP Publishing, Bristol, pp.103-108, ISBN 0-7503-0821-4. "Rapid multicomponent analysis using a thermally-modulated resistive gas microsensor and a discrete wavelet transform".
 30. Book chapter: Cole M, **Gardner JW**, and Bartlett PN 2001 in *Artificial Chemical Sensing: Olfaction and the Electronic Nose (ISOEN 2001)*, Sensor Division, (Eds. J.R. Stetter and W.R. Penrose), The Electrochemical Society Inc. USA, Proceedings Volume 2001-15, pp.117-120, ISBN 1-56677-321-0. "Low-drift odour and vapour ratiometric resistive elements for analogue CMOS smart sensors".

31. Edited book: **Gardner JW** and Persaud KC (2000) *Electronic Noses and Olfaction*, IOP Publishing Ltd, Bristol, pp310. ISBN 0-7503-0764-1.
32. Book chapter: de Matos R, Mason DJ, Dow CS and **Gardner JW** 2000 in **Gardner JW and Persaud KC (eds.)** *Electronic Noses and Olfaction*, IOP Publishing Ltd, Bristol, pp181-188, ISBN 0-7503-0764-1. “Investigation of the growth characteristics of E. coli using headspace analysis”
33. Book chapter: Boilot P, Hines EL, John S, Mitchell J, Lopez F, **Gardner JW**, Llobet E, Hero M, Fink C and Gongora M 2000 in **Gardner JW and Persaud KC (eds.)** *Electronic Noses and Olfaction*, IOP Publishing Ltd, Bristol, pp189-196, ISBN 0-7503-0764-1. “Detection of bacteria causing eye infections using a neural network based electronic nose system”.
34. Book chapter: Covington JA, **Gardner JW**, Toh C, Bartlett PN, Briand D and de Rooij NF 2000 in **Gardner JW and Persaud KC (eds.)** *Electronic Noses and Olfaction*, IOP Publishing Ltd, Bristol, pp35-42, ISBN 0-7503-0764-1. “Characterisation of an electrodeposited conducting polymer FET array for vapour and odour sensing”.
35. Book chapter: Boilot P, Hines EL and **Gardner JW** 2000 in *Sensors Update*, vol. 8, Wiley-VCH Verlag GmbH, Weinheim, pp.73-94, ISBN 3-527-30258-1 “Knowledge extraction from electronic nose data sets using hybrid neuro-fuzzy systems”.
36. Authored book: **Gardner JW** and Bartlett PN (1999) *Electronic noses: principles and application*, Oxford University Press, Oxford, pp245. ISBN 0-19-855955-0.
37. Edited Book: Middlehoek S and **Gardner JW** (1999) *Proceedings of Eurosensors XII, Part III, Sensors and Actuators B*, Vol. 58, pp283-558.
38. Book chapter: Varadan VK and **Gardner JW** 1999 in *Smart Structures and MEMS* (ed. V.K. Varadan), Proceedings of SPIE, Vol. 3673, p.67-76 (1999) “Smart tongues and smart noses”
39. Book chapter: **Gardner JW**, Udrea F, and Milne B 1999 in *Smart Structures and MEMS* (ed. V.K. Varadan), Proceedings of SPIE, Vol. 3673, p.104-112 (1999) “Numerical simulation of a new generation of high-temperature micropower gas and odor sensor based on SOI technology”
40. Book chapter: Covington JA, **Gardner JW**, and Hatfield JV 1999 in *Smart Structures and MEMS* (ed. V.K. Varadan), Proceedings of SPIE, Vol. 3673, p.296-307 (1999) “Conducting polymer FET devices for vapour sensing”
41. Book chapter: Pike AC, Welham CJ and **Gardner JW** 1998 *McGrawHill Yearbook of Science and Technology* “Microsensors”
42. Thesis: **Gardner JW** 1997 *Research and Development of Sensors and Intelligent Instrumentation (Electronic Noses) for Complex Odour and Gas Mixture Analysis*, DSc Thesis, Warwick University, UK.
43. Book chapter: Bartlett PN, Elliott JM, and **Gardner JW** 1997 in *Reviews on Analytical Chemistry. Euroanalysis IX* (eds. P. Palmisano, L Sabbatini and P G Zamboni) Societa Chimica Italiana, Rome, p.33-44 “Applications of, and developments in, machine olfaction”
44. Book chapter: Al-Khalifa S, **Gardner JW** and Craine JF 1997 in *Sensors and Their Applications VIII* (eds. A T Augousti and N M White), p. 89-94 “Characterisation of a thermal wave microsensor for the intelligent analysis of atmospheric gases”
45. Book chapter: **Gardner JW** and Hines EL 1996 in *Handbook of Biosensors: Medicine, Food & the Environment* (ed. E. Kress-Rogers) "Pattern analysis techniques" Ch. 27 pp633-652
46. Book chapter: Bartlett PN, Beriet C, Chetwynd DG, **Gardner JW** and Liu X 1996 in *The Mechanics of Thin Film Coatings* (eds. PH Gaskell, MD Savage and JL Summers), World Scientific, Singapore “Tribological properties of conducting polymers for application in Nanotechnology”
47. Book chapter: **Gardner JW** and Pike A 1995 in *Sensors and their Applications VII*, ed. AT Augousti, IOP Publishing, Bristol, pp58-59, “Nanoengineered dual sensor device for intelligent monitoring of gases”
48. Book chapter: Elliott-Martin RJ, Bartlett PN, **Gardner JW** and Mottram TT 1995 in *Sensors and their Applications VII*, ed. A.T. Augousti, IOP Publishing, Bristol, pp12-20, “An overview of electronic noses and their applications”

49. Authored book: **Gardner JW** (1994) *Microsensors: Principles and Applications*, J. Wiley & Sons Ltd, Chichester, pp 320. ISBN 0-471-94135-2.
50. Book chapter: Larkin AB, Hines EL, Thomas SM and **Gardner JW** 1994 in Workshop on Neural Network Applications and Tools, eds. PJ Lisboa & MJ Taylor, IEEE Press, pp6-10, "Supervised learning using the vector memory array method"
51. Book chapter: Hines EL, Gianna CC and **Gardner JW** 1993 *Neural Networks: Techniques & Applications* eds. PJ Lisboa and MJ Taylor (Ellis Horwood) Ch. 8 "Neural network based electronic nose using constructive algorithms"
52. Edited book: **Gardner JW** and Bartlett PN (1992) *Sensors & Sensory Systems for an Electronic Nose*, Kluwer Academic Publishers, Dordrecht, NATO ASI Series: Applied Science Vol. 212, pp327. ISBN 0-7923-1693-2.
53. Book chapter: Dodd GH, Bartlett PN and **Gardner JW** 1992 in *Sensors & Sensory Systems for an Electronic Nose* eds. J W Gardner and P N Bartlett (Dordrecht: Kluwer Academic Publishers) NATO ASI Series E: Applied Science **Vol. 212** Ch. 1 pp. 1-12 "Odours, the stimulus for an electronic nose"
54. Book chapter: Bartlett PN and **Gardner JW** 1992 in *Sensors & Sensory Systems for an Electronic Nose* eds. J W Gardner and P N Bartlett (Dordrecht: Kluwer Academic Publishers) NATO ASI Series E: Applied Science **Vol. 212** Ch. 4 pp. 31-52 "Odour sensors for an electronic nose"
55. Book chapter: **Gardner JW** and Bartlett PN 1992 in *Sensors & Sensory Systems for an Electronic Nose* eds. J W Gardner and P N Bartlett (Dordrecht: Kluwer Academic Publishers) NATO ASI Series E: Applied Science **Vol. 212** Ch. 11 pp. 161-180 "Pattern recognition in odour sensing"
56. Book chapter: Olafsson R, Martinsdottir E, Olafsdottir G, Sigfusson TI and **Gardner JW** 1992 in *Sensors & Sensory Systems for an Electronic Nose* eds. J W Gardner and P N Bartlett (Dordrecht: Kluwer Academic Publishers) NATO ASI Series E: Applied Science **Vol. 212** Ch. 15 pp. 257-272 "Monitoring of fish freshness"
57. Book chapter: **Gardner JW** and Bartlett PN 1991 in *Techniques & Mechanisms in Gas Sensing* eds. P Moseley, J Norris, D Williams (Bristol: Adam Hilger) pp. 347-380 "Pattern recognition in gas sensing"
58. Book chapter: Schild D and **Gardner JW** 1991 In *Cell to Cell Signals in Plants and Animals*, eds. V Neuhoff & J Friend NATO ASI Series, Vol. H51 (Springer-Verlag: Berlin) pp. 96-117 "Detection and coding of chemical signals: A comparison between artificial & biological systems"
59. Book chapter: **Gardner JW** and Bartlett PN 1991 in *Nanotechnology* eds. DJ Whitehouse and K Kawata (Bristol: Adam Hilger) pp. 19-32 "Potential applications of electropolymerised thin organic films in nanotechnology"
60. Book chapter: Corcoran P, Shurmer HV and **Gardner JW** 1991 in *Sensors: Systems & Their Applications* ed. KV Grattan (Bristol: Adam Hilger) pp. 99-105 "Technological aspects of the design and performance of metal oxide odour sensors"
61. Book chapter: **Gardner JW** 1991 in *From Instrumentation to Nanotechnology* eds. JW Gardner and HT Hingle (London: Gordon & Breach) pp. 119-136 "Recent advances in solid-state microsensors"
62. Book chapter: **Gardner JW** and Bartlett PN 1991 in *Advances in Nanoscale Physics Electronics and Engineering Series: Nanotechnology* eds. DJ Whitehouse and K Kawata (London: Adam Hilger) pp. 19-32 "Potential applications of electropolymerised thin organic films in nanotechnology"
63. Edited book: **Gardner JW** and Hingle HT (1991) *From Instrumentation to Nanotechnology*, Gordon and Breach Science Publishers, Philadelphia, pp336. ISBN 2-88124-794-6.
64. Book chapter: Shurmer HV and **Gardner JW** 1990 *Yearbook of Science & Technology* (New York: McGraw-Hill) p123 "The electronic nose"
65. Book chapter: **Gardner JW**, Bartlett PN, Dodd GH and Shurmer HV 1990 *Chemosensory Information Processing*, ed. D Schild (Berlin: Springer-Verlag) pp. 131-173 "The design of an artificial olfactory system"

66. Book chapter: **Gardner JW**, Hall SF, Hewitt SR, Matthews RH and Mustoe FJ 1987 *Implications of Probabilistic Risk Assessment*, ed. M C Cullingford et al. (London: Elsevier) pp. 331-334 "A
67. Thesis: **Gardner JW** 1983 *Charging of grains in discontinuous metal films*, PhD Thesis, University of Cambridge, UK.

II. REFEREED JOURNAL ARTICLES

68. Wardana I, **Gardner JW** and Fahmy SA 2022 *Neural Computing & Applications* <https://doi.org/10.1007/s00521-022-07224-2> "Estimation of missing air pollution data using a spatiotemporal convolutional autoencoder"
69. Specht JP, Esfahani S, .. **Gardner JW** 2022 *IEEE Trans on Instrumentation and Measurement* **71** "Thermally modulated CMOS-compatible particle sensor for air quality monitoring"
70. Wardana I, **Gardner JW**, Fahmy S 2021 *Sensors* **21** 1064 "Optimising deep learning at the edge for accurate hourly air quality prediction"
71. Popa D, Hopper R, ... **Gardner JW** and Udrea F 2021 *Nature Scientific Reports* **11** "A highly stable, nanotube-enhanced CMOS-MEMS thermal emitter for mid-IR gas sensing"
72. Specht JP, Esfahani S, ... **Gardner JW** 2021 *IEEE Sensors Journal* **21** "AIN FBAR particle sensor with a thermophoretic sampling mechanism"
73. Wardana I, **Gardner JW**, Fahmy S 2021 *Sensors* **21** 1064 "Optimising deep learning at the edge for accurate hourly air quality prediction"
74. Esfahani S, Rollins P, Specht J, Cole M, **Gardner JW** 2020 *IEEE Sensors* "Smart city battery operated indoor air quality monitoring system"
75. Esfahani S, Shanta M, Specht J, Xing Y, Cole M and **Gardner JW** 2020 *IEEE Sensors* "Wearable IoT electronic nose for urinary incontinence detection"
76. Esfahani S, Specht J, Jolly G, Cole M, **Gardner JW** 2020 *MDPI Proceedings* **56** 11 "Solidly mounted resonators for biomedical applications"
77. Xing Y, Vincent TA, Fan H, Schaffernicht E, Lilienthal AJ, Cole M, **Gardner JW** 2019 *IEEE Sensors Journal* **19** 12418-12431. "FireNose on mobile robot in harsh environments"
78. Xing Y, Urasinska-Wojcik, **Gardner JW** 2019 *Sens. Act. B* "Plasmonic enhanced CMOS non-dispersive infrared gas sensor for low-cost application"
79. Gardner EL, Vincent TA, Jones RG, **Gardner JW**, Coull J, de Luca A, Udrea F 2019 *IEEE Sensors Journal* **19** 2991-2998 "MEMS thermal flow sensors – an accuracy investigation"
80. Vincent TA, Xing Y, Cole M, **Gardner JW** 2019 *Sens. Act. B* **279** 351-360 "Investigation of response of high bandwidth MOX sensors to gas plumes for application on a mobile robot in hazardous environments"
81. Xing Y, Vincent TA, Cole M, **Gardner JW** 2019 *Sensors* **19** 1180 "Real-time thermal modulation of high bandwidth MOX gas sensors for mobile robot applications"
82. Ghosh R, Gardner JW, Guha P 2019 *IEEE Trans on Electron Devices* **66** 3254-3264 "Air pollution monitoring using near room temperature resistive gas sensors: a review"
83. Xing Y, Vincent TA, Fan H, Schaffernicht E, Lilienthal AJ, Cole M, **Gardner JW** 2019 *IEEE Sensors Journal* **19** 12418-12431. "FireNose on mobile robot in harsh environments"
84. Urasinska-Wojcik B and **Gardner JW** 2018 *IEEE Sensors Journal* **18** 3502-3508 "H₂S sensing in dry and humid H₂ environment with p-type CuO thick-film gas sensors"
85. Vincent TA, Xing Y, Cole M, **Gardner JW** 2018 *MDPI Proceedings* **2** 858 "Thermal modulation of a high bandwidth gas sensor array in real-time for application on a mobile robot"

86. Xuan W, Cole M, **Gardner JW**, Thomas S, Villa-Lopez F, Wang X, Dong S, Luo J 2017 *J. Micromech. Microeng.* **27** 055017 “A film bulk acoustic resonator oscillator based humidity sensor with graphene oxide as the sensitive layer”
87. Urasinska-Wojcik B and **Gardner JW** 2017 *IEEE Sensors Letters* Vol. 1 No.4 “Identification of H₂S impurity in hydrogen using temperature modulated metal oxide resistive gas sensors with a novel signal processing technique”
88. Urasinska-Wojcik B, Vincent TA, Chowdhury MF, **Gardner JW** 2017 *Sens. Act. B* **239** 1051-1059 “Ultrasensitive WO₃ gas sensors for NO₂ detection in air and low oxygen environment”
89. **Gardner JW** and Vincent TA 2016 *Sensors* **16** 947 “Electronic Noses for Well-Being: Breath Analysis and Energy Expenditure”
90. Vincent TA and **Gardner JW** 2016 *Sens. Act. B* **236** 954-964 “A low cost MEMS based NDIR system for the monitoring of carbon dioxide in breath analysis at ppm levels”
91. Santra S, Sinha AK, de Luca A, Ali SZ, Udrea F, Guha PK, Ray SK, **Gardner JW** 2016 *Nanotechnology* **27** Article 125502 DOI: 10.1088/0957-4484/27/12/125502 “Mask-less deposition of Au-SnO₂ nanocomposites on CMOS MEMS platform for ethanol detection”
92. De Luca A, Santra S, Ghosh R, Ali SZ, **Gardner JW**, Guha PK, Udrea F 2016 *Nanoscale* **8** 4565-4572 “Temperature-modulated graphene oxide resistive humidity sensor for indoor air quality monitoring”
93. Thomas S, Cole M, Villa-Lopez FH, **Gardner JW** 2016 *Sens. Act. A* **244** 138-145 “High frequency surface acoustic wave resonator-based sensor for particulate matter detection”
94. Thomas S, Villa-Lopez F, Theunis J, Peters J, Cole M, **Gardner JW** 2016 *IEEE Sensors Journal* **16** 2282-2289 “Particle sensor using solidly mounted resonators”
95. Villa-Lopez F, Rughoobur G, Thomas S, Flewitt AJ, Cole M, **Gardner JW** 2016 *Measurement Science and Technology* **27** Article 025502 “Design and modelling of solidly-mounted resonators for low-cost particle sensing”
96. Vincent TA, **Gardner JW**, Chappell MJ, Hattersley JG, Wilson A 2016 *Procedia Engineering* **168** 129-132 “Measurement of energy expenditure on a smartphone using a handheld breath analyser”
97. Urasinska-Wojcik B, Vincent TA, **Gardner JW** 2016 *Procedia Engineering* **168** 255-258 “H₂S sensing properties of WO₃ based gas sensor”
98. Chowdhury MF, Hopper R, Ali SZ, **Gardner JW**, Udrea F 2016 *Procedia Engineering* **168** 1204-1207 “MEMS infrared emitter and detector for capnography applications”
99. Ali SZ, de Luca A, Hopper R, Boual S, **Gardner JW**, Udrea F 2015 *IEEE Sensors Journal* **15** 6775-6782 “A low-power, low-cost infra-red emitter in CMOS technology”
100. Santra S, Sinha AK, de Luca A, Ali SZ, Udrea F, Guha PK, Ray SK, **Gardner JW** 2015 *Nanotechnology* “Mask-less deposition of Au-SnO₂ nanocomposites on CMOS MEMS platform for ethanol detection”
101. Santra S, Hu G, Howe R, de Luca A, Ali SZ, Udrea F, **Gardner JW** 2015 *Nature Scientific Reports* **5** 17374 “CMOS integration of inkjet-printed graphene for humidity sensing”
102. Santra S, de Luca A, Bhaumik S, Ali S, Udrea F, **Gardner JW**, Ray SK, Guha PK 2015 *RSC Advances* **5** 47609-47616 “Dip pen nanolithography-deposited zinc oxide nanorods on a CMOS MEMS platform for ethanol sensing”
103. Villa-Lopez F, Rughoobur G, Thomas S, Flewitt AJ, Cole M, **Gardner JW** 2015 *Meas. Sci. Technol.* **27** “Design and modelling of solidly-mounted resonators for low-cost particle sensing”
104. De Luca A, Cole M, Hopper R, Boual S, Warner J, Robertson A, Ali Z, Udrea F and Gardner JW 2015 *Applied Physics Letters* **106**, 194101 “Enhanced spectroscopic gas sensors using in-situ grown carbon nanotubes”
105. Olsson SB, Challiss RAJ, Cole M, Gardeniers JG, **Gardner JW**, Guerrero A, Hannson BS and Pearce TC 2015 *Bioinspiration & Biomimetics* **10** (4) 043001 “Development of an insect-based infochemical communications technology”
106. Cole M, Spulber I and **Gardner JW** 2015 *Sens. Actuators B: Chem.* **207** 1147-1153 “Surface acoustic wave electronic tongue for robust analysis of sensory components”
107. Santra S, Sinha AK, Ray SK, Ali SZ, Udrea F, **Gardner JW** and Guha PK 2014 *Procedia Engineering* “Ambient temperature carbon nanotube ammonia sensor on CMOS platform”

108. de Luca A, Cole MT, Hopper RH, Ali SZ, Udrea F, **Gardner JW** and Milne WI 2014 *Procedia Engineering* “SOI CMOS MEMS infra-red thermal source with carbon nanotubes coating”
109. Hopper R, Ali SZ, Chowdhury MF, Boual S, de Luca A, **Gardner JW** and Udrea F 2014 *Procedia Engineering* “A CMOS-MEMS thermopile with an integrated temperature sensing diode for Mid-IR thermometry”
110. Vincent TA, Wilson A, Hattersley JG, Chappell MJ and **Gardner JW** 2014 *Procedia Engineering* “Design and modelling of a portable breath analyser for metabolic rate measurement”
111. Thomas S, Cole M, de Luca A, Torrisi F, Ferrari AC, Udrea F and **Gardner JW** 2014 *Engineering Procedia* “Graphene-coated Rayleigh SAW resonators for NO₂ detection”
112. Pearce TC, Karout S, Racz Z, Capurro A, Gardner JW and Cole M 2013 *Frontiers in Neuroscience* **7** 119 1-17 “Rapid processing of chemosensor transients in a neuromorphic implementation of the insect macroglomerular complex”
113. Guha PK, Santra S, Covington J, Udrea F, **Gardner JW** *Sensors and Actuators B* “ZnO nanowires based sensors grown on fully processed SOI CMOS substrate” at press
114. Racz Z, Cole M, **Gardner JW**, Chowdhury MF, Bula WP, Gardeniers J, Karout S, Capurro A, Pearce TC 2012 *Int. J. Circ. Theor. Appl.* Wiley, DOI: 10.1002/cta.1829 “Design and implementation of a modular biomimetic infochemical communication system”
115. Falconi C, di Natale C, Martinelli E, d’Amico A, Zampetti E, **Gardner JW**, van Vliet C 2012 *Sensors and Actuators B* **174** 577-585 “1/f noise and its unusual high-frequency deactivation at high biasing currents in carbon black polymers with residual 1/f^γ noise and a preliminary estimation of the average trap energy”
116. Che Harun FK, Covington JA and **Gardner JW** 2012 *IET Nanobiotechnology* **6** 45-51 “Mimicking the biological olfactory system: a portable electronic mucosa”
117. Yang J, Racz Z, **Gardner JW**, Cole M, Chen H 2012 *Sensors and Actuators B* **173** 547-554 “Ratiometric info-chemical communication system based on polymer-coated surface acoustic wave microsensors”
118. Vivancos J, Rácz Z, Cole M, **Gardner JW** 2012 *Sensors and Actuators B* **171-172** 469-477 “Surface acoustic wave based analytical system for the detection of liquid detergents”
119. Racz Z, Olsson S, **Gardner JW**, Pearce TC, Hannson, Cole M 2011 *Procedia Computer Science* **7** 106-109 “Challenges of biomimetic infochemical communication”
120. Ali S, Ho W, Chowdhury M, Covington J, Moseley P, Saffell J, **Gardner JW** and Udrea F 2011 *AIP Conf. Proc.* 1362 53-54 “A high temperature SOI CMOS NO₂ sensor”
121. Aziz M, CheHarun F, Covington J, and Gardner JW 2011 AIP Conf. Proc. **1362** 223-224 “Towards an analogue neuromorphic VLSI instrument for the sensing of complex odours”
122. Karout S, Racz Z, Capurro A, Cole M, **Gardner JW**, Pearce TC 2011 *AIP Conf. Proc* **1362** 77-78 “Ratiometric chemical blend processing with a neuromorphic model of an insect macroglomerular complex”
123. Cole M, Covington JA, and **Gardner JW** 2011 *Sensors and Actuators B* **156** 832-839 “Combined electronic nose and tongue for a flavour sensing system”
124. Santra S, Ali SZ, Guha P, Zhong G, Robertson J, Covington JA, Milne WI, **Gardner JW** and Udrea F 2010 *Nanotechnology* **21** 1-7 “Post-CMOS wafer level growth of carbon nanotubes for low cost microsensors – a proof of concept”
125. **Gardner JW**, Guha PK, Udrea F and Covington JA 2010 *IEEE Sensors* **10** 1833-1848 “CMOS interfacing for integrated gas sensors: a review”
126. Santra S, Guha PK, Ali SZ, Hiralal P, Unalan HE, Covington JA, Amaratunga GAJ, Milne WI, **Gardner JW** and Udrea F 2010 *Sensors and Actuators B* **146** 559-565 “ZnO nanowires grown on SOI CMOS substrates for ethanol sensing”
127. Garcia-Guzman J, **Gardner JW** and Cole M 2010 *Procedia Engineering* **5** 176-179 “A duo-type smart gas sensor ASIC chip for use with resistive nanomaterials”
128. Iwaki T, Covington JA, and **Gardner JW** 2009 *IEEE Sensors Journal* **9** 314-318 “Identification of different vapors using a single temperature modulated polymer sensor with a novel signal processing technique”

129. **Gardner JW** and Taylor JE 2009 *IEEE Sensors Journal* **9** 929-935 “Novel convolution-based signal processing techniques for an artificial olfactory mucosa”
130. Iwaki T, Covington JA, Udrea F, **Gardner JW** 2009 *Sensors and Actuators B* **141** 370–380 “Identification and quantification of different vapours using a single polymer chemoresistor and the novel dual transient temperature modulation technique”
131. Che Harun FK, Taylor JE, Covington JA, and **Gardner JW** 2009 *Sensors and Actuators B* **141** 134-140 “An electronic nose employing dual-channel odour separation columns with large chemosensor arrays for advanced odour discrimination”
132. Sanchez-Montanes MA, **Gardner JW** and Pearce TC 2008 *Proc. Roy. Soc. A*, **464**, 1057-1077 “Spatiotemporal information in an artificial olfactory mucosa”
133. Maeng S, Guha P, Udrea F, Ali SZ, **Gardner JW** et al., 2008 *ETRI Journal*, **30**, 516-525 “SOI CMOS-based smart gas sensor system for ubiquitous sensor networks”
134. Ali SZ, Udrea F, Milne WI, and Gardner JW 2008 *J. Microelectromechanical Systems*, **17**, 1408-1417 “Tungsten-based SOI microhotplates for smart gas sensors”
135. Lu CC, Liao K-H, Udrea F, Covington JA and **Gardner JW** 2008 *Journal of Micromechanics and Microengineering*, **18**, 11pp “Multi-field simulations and characterization of CMOS-MEMS high-temperature smart gas sensors based on SOI technology”
136. Koickal T, Hamilton A, Tan SL, Covington JA, **Gardner JW** and Pearce TC 2007 *IEEE Transactions on Circuits and Systems I*, **54**, 60-73 “Analog VLSI circuit implementation of an adaptive neuromorphic olfaction chip”
137. Yates J, Chappell M, and **Gardner JW** 2007 *Proc. Roy. Soc. A*, **463**, 551-568 “Novel phenomena based dynamic model of carbon-black/composite vapour sensors”.
138. Covington JA, **Gardner JW**, Hamilton A, Pearce TC and Tan SL 2007 *IET Proc. Nanobiotechnology*, **1**, 15-21 “Towards a truly biomimetic olfactory microsystem: an artificial olfactory mucosa”
139. **Gardner JW**, Covington JA, Tan S-L and Pearce TC 2007 *Proc. Roy. Soc. A*, **463**, 1713-1728 “Towards an artificial olfactory mucosa for improved odour classification”
140. Guha PK, Ali SZ, Lee CC, Udrea F, Milne WI, Iwaki T, Covington JA and **Gardner JW** 2007 *Sensors and Actuators B*, **127**, 260-266 “Novel design and characterisation of SOI CMOS microhotplates for high temperature gas sensors”
141. Tan SL, Covington JA, and **Gardner JW** 2006 *IEE Proc.-Sci. Meas. Technol.*, **153**, 94-100 “Velocity-optimised diffusion for ultra-fast polymer-based resistive gas sensors”
142. Leonte II, Sehra G, Cole M, Hesketh P, and **Gardner JW** 2006 *Sens. Actuators B*, **118**, 349-355 “Taste sensors utilizing high-frequency SH-SAW devices”
143. **Gardner JW**, Boilot P and Hines EL 2005 *Sensors and Actuators B*, **106**, 114-121 “Enhanced electronic nose performance by sensor selection using a new integer based genetic algorithm approach”
144. **Gardner JW**, Hines EL and Dowson C 2005 *Ingenia*, **18738**, 38-39 “Smelling illness”
145. Dutta R, Morgan D, Baker N, **Gardner JW**, and Hines EL 2005 *Sensors and Actuators B*, **109**, 355-352 “Identification of Staphylococcus aureus infections in hospital environment: electronic nose based approach”
146. Yates JWT, **Gardner JW**, Chappell MJ, and Dow CS 2005 *IEE Proc.-Sci. Meas. Technol.*, **152**, 97-102 “Identification of bacterial pathogens using quadrupole mass spectrometer data and radial basis function neural networks”
147. Yates JWT, Chappell MJ, **Gardner JW**, Dow CS, Dowson C, Hamood A, Bolt F and Beeby L 2005 *Computer Methods and Programs in Biomedicine*, **79**, 259-271 “Data reduction in headspace analysis of blood and urine samples for robust bacterial identification”
148. Jacesko S, Abraham JK, Taeksoo J, Varadan VK, Cole M and **Gardner JW** 2005 *Smart Mater. Struct.*, **14**, 1010-1016 “Investigations on an electronic tongue with polymer microfluidic cell for liquid sensing and identification”

149. Barker AL, Unwin PR, **Gardner JW** and Rieley H 2004 *Electrochemistry Communications*, **6**, 91-97 “A multi-electrode probe for parallel imaging in scanning electrochemical microscopy”
150. Dutta R, **Gardner JW** and Hines EL 2004 *MRS Bulletin*, **29**, 697-700, October 2004, 1-5 “Electronic noses diagnose illness: classification of ENT bacteria using a neural-network based electronic nose”
151. Cole M, Sehra G, **Gardner JW** and Varadan VK 2004 *IEEE Sensors Journal*, **4**, 543-550 “Development of smart tongue devices for measurement of liquid properties”
152. Sehra G, Cole M, and **Gardner JW** 2004 *Sensors and Actuators B*, **103**, 233-239 “Miniature tasting system based on dual SH-SAW sensor device: an electronic tongue”
153. Shykon ME, Morgan DW, Dutta R, Hines EL, and **Gardner JW** 2004, *Journal of Laryngology and Otology*, **118**(9), 706-709, ISSN:0022-2151, “Clinical evaluation of the value of the electronic nose in the diagnosis of ear, nose and throat infection – a preliminary study”
154. Covington JA, **Gardner JW**, Bartlett PN and Toh CS 2004 *IEE Proc. G - Circ. Dev. Syst.*, **151**, 326-334 “Conductive polymer gate FET devices for vapour sensing”
155. Dutta R, Hines EL, **Gardner JW**, Udrea DD and Boilot P 2003 *Meas. Sci. Technol.*, **14**, 190-198 “Non-destructive egg freshness determination: an electronic nose based approach”
156. Lee SM, Dyer DC and **Gardner JW** 2003 *Microelectronics Journal*, **34**, 115-126 “Design and optimisation of high-temperature silicon micro-hotplate for nanoporous palladium pellistors”
157. Al-Khalifa S, Maldonado-Bascon S and **Gardner JW** 2003 *IEE Proc.-Sci. Meas. Technol.*, **150**, 11-14 “Identification of CO and NO₂ using a thermally modulated resistive microsensor and support vector machine”
158. Cole M, Ulivieri N, Garcia-Guzman J, and **Gardner JW** 2003 *Microelectronics Journal*, **34**, 865-875 “Parametric model of a polymeric chemoresistor for use in smart sensor design and simulation”
159. Dutta R, Kashwan KR, Bhuyan M, Hines EL and **Gardner JW** 2003 *Neural Networks*, **16**, 847-853 “Electronic nose based tea quality standardisation”
160. Garcia-Guzman J, Ulivieri N, Cole M, and **Gardner JW** 2003 *Sensors and Actuators B*, **95**, 232-243 “Design and simulation of a smart ratiometric ASIC chip for VOC monitoring”
161. Ionescu R, Llobet E, Al-Khalifa S, **Gardner JW**, Vilanova X, Brezmes J and Correig X 2003 *Sensors and Actuators B*, **95**, 203-211 “Response model for thermally-modulated tin oxide based microhotplate gas sensors”
162. Fang Q, Chetwynd DG, **Gardner JW**, Toh C, and Bartlett PN 2003 *Mat. Sci. Engg A*, **355**, 62-67 “A preliminary study of conducting polymers as microvalve seals”
163. Dutta R, Hines EL, **Gardner JW**, Kashman KR, and Bhuyan M 2003 *Sensors and Actuators B*, **94**, 228-237 “Tea quality prediction using a tin oxide based electronic nose: an artificial Lu C-C, **Gardner JW** and Udrea F 2001 *Instruments Today* **121** 76-90 “Design and development of SOI MOSFET micro gas sensors”
164. Fang Q, Chetwynd DG, Covington JA, Toh C-S, **Gardner JW** 2002 *Sensors & Actuators B* **84** 66-71 “Micro-gas-sensor with conducting polymers”
165. Boilot P, Hines EL, **Gardner JW**, Pitt R, John S, Mitchell J, Morgan D 2002 *IEEE Sensors Journal* **2** 247-253 “Classification of bacteria responsible for ENT and eye infections using the Cyranose system”
166. Searle GE, **Gardner JW**, Chappell MJ, Godfrey KR and Chapman MJ 2002 *IEEE Sensors Journal* **2** 218-229 “System identification of electronic nose data from cyanobacteria experiments”
167. Dutta R, Hines EL, **Gardner JW** and Boilot P 2002 *BioMedical Engineering OnLine*, **1:4**, “Bacteria classification using Cyranose 320 electronic nose” <http://www.biomedical-engineering-online.com/content/1/1/4>
168. Fang Q, Chetwynd DG, **Gardner JW** 2002 *Sensors and Actuators A*, **99**, 74-77 “Conducting polymer films by UV-photo processing”

169. Llobet E, Brezmes J, Ionescu X, Al-Khalifa S, **Gardner JW**, Barsan N, and Correig X 2002 *Sensors and Actuators B*, **83**, 238-244 “Wavelet transform and fuzzy ARTMAP-based pattern recognition for fast gas identification using a microhotplate gas sensor”
170. Covington JA, **Gardner JW**, Briand D and de Rooij NF 2001 *Sensors and Actuators B* **77** 155-162 “A polymer gate FET sensor array for detecting organic vapours”
171. Llobet E, Rubio J, Vilanova X, Brezmes J, Correig X, **Gardner JW** and Hines EL 2001 *Sensors and Actuators B* **76** 419-429 “Electronic nose simulation tool centred on PSpice”
172. Llobet E, Ionescu R, Al-Khalifa S, Brezmes J, Vilanova X, Correig X, Bârsan B and **Gardner JW** 2001 *IEEE Sensors Journal* **1** 207-213. “Multicomponent gas mixture analysis using a single tin oxide sensor and dynamic pattern recognition”
173. Udrea F, **Gardner JW**, Setiadi D, Covington JA, Dogaru T, Lu C-C and Milne WI 2001 *Sensors and Actuators B* **78** 180-190 “Design and simulations of SOI CMOS micro hot-plate gas sensors”
174. Hatfield JV, Covington JA and **Gardner JW** 2000 *Sensors and Actuators B* **65** 253-256 “GasFETs incorporating conducting polymers as gate materials”
175. Shin HW, Llobet E, **Gardner JW**, Hines EL and Crawford CS 2000 *IEE Proc.- Sci. Meas. Technol.* **147** 158-164 “Classification of the strain and growth phase of cyanobacteria in potable water using an electronic nose system”
176. **Gardner JW**, Shin HW, Hines EL and Dow CS 2000 *Sensors and Actuators B* **69** 336-341 “An electronic nose system for monitoring the quality of potable water”
177. **Gardner JW**, Shin HW and Hines EL 2000 *Sensors and Actuators B* **70** 19-24 “An electronic nose system to diagnose illness”
178. **Gardner JW**, Llobet E and Hines EL 1999 *Meas. Sci. Technol.* **10** 538-548 “Non-destructive banana ripeness determination using a neural network based electronic nose”
179. **Gardner JW**, Hines EL, Molinier F, Bartlett PN and Mottram TT 1999 *IEE Proc.- Sci. Meas. Technol.* **146** 102-6 “Prediction of health of dairy cattle from breath samples using neural network with parametric model of dynamic response of array of semiconducting gas sensors”
180. Craven M A and **Gardner JW** 1999 *Trans Inst MC* **20** 67-73 “Rapid static head-space sampler for automated odour analysis”
181. Hines EL, Llobet E and **Gardner JW** 1999 *Electronic Letters* **35** 821-3 “Neural network based electronic nose for apple ripeness determination”
182. **Gardner JW**, Llobet E and Hines EL 1999 *IEE Proc.- Circuits, Devices and Systems* **146** 101-4 “PSPICE model for resistive gas and odour sensors”
183. Ingleby P, **Gardner JW** and Bartlett PN 1999 *Sensors and Actuators B* **57** 17-27 “Effect of micro-electrode geometry on response of thin-film poly(pyrrole) and poly(aniline) chemoresistive sensors”
184. Cole M, **Gardner JW**, Lim AWY, Scivier PK and Brignell JE 1999 *Sensors and Actuators B* **58** 518-525 “Polymeric resistive bridge gas sensor array driven by a standard cell CMOS current drive chip”
185. Hines EL, Llobet E and **Gardner JW** 1999 *Proc. IEE: Circuits, Systems and Devices* **146** 297-310 “Electronic noses: a review of signal processing techniques”
186. Llobet E, Hines EL, **Gardner JW**, Bartlett PN and Mottram TT 1999 *Sensors and Actuators B* **61** 183-190 “Fuzzy ARTMAP based electronic nose data analysis”
187. Pike AC and **Gardner JW** 1998 *Sensors and Actuators B* **45** 19-26 “Thermal modelling of micropower chemoresistive silicon sensors”
188. **Gardner JW**, Craven M, Dow C and Hines EL 1998 *Meas. Sci. Technol.* **9** 120-127 “Prediction of bacteria type and growth phase by an electronic nose with a multi-layer perceptron network”
189. **Gardner JW**, Vidic M, Ingleby P, Pike AC, Brignell JE, Scivier P, Bartlett PN, Duke AJ, Elliott JM 1998 *Sensors and Actuators B* **48** 290-296 “Response of poly(pyrrole) resistive micro-bridge to ethanol vapour”
190. Liu X, Chetwynd D G and **Gardner JW** 1998 *Int. J. Machine Tools and Manufacture* **38** 669-675 “Surface characterisation of electro-active thin polymeric film bearings”

191. Pearce TC and **Gardner JW** 1998 *Analyst* **123** 2047-2055 “Predicting organoleptic scores of sub-ppm flavour notes. Part 1. Theoretical and experimental details.”
192. Pearce TC and **Gardner JW** 1998 *Analyst* **123** 2057-2066 “Predicting organoleptic scores of sub-ppm flavour notes. Part 2. Computational analysis and results.”
193. Liu X, Chetwynd D G, **Gardner JW**, Smith S T, Beriet C and Bartlett P N 1998 *Tribology International* **31** 313-323 “Measurement of friction at light loads and low speeds in poly(pyrrole) thin film bearings”
194. Bartlett P N, Elliott J M and **Gardner JW** 1997 *Annali di Chimica* **87** 33-44 “Applications of, and developments in, machine olfaction”
195. Dyer D C and **Gardner JW** 1997 *Sensors and Actuators* **62** 724-728 “High-precision intelligent interface for a hybrid electronic nose”
196. Bartlett P N, Elliott J M and **Gardner JW** 1997 *Measurement + Control* **30** 273-279 “Integrated sensor arrays for the dynamic measurement of food flavour release”
197. Hines E L, **Gardner JW** and Potter C E R 1997 *Measurement + Control* **30** 262-268 “Olfactory feature maps from an electronic nose”
198. **Gardner JW** and Gardner W E 1997 *Insight* **39** 865-869 “The role of the electronic nose in condition monitoring”
199. Pearce T C and **Gardner JW** 1997 *Seminars in Food Analysis* **2** 275-281 “Prediction of organoleptic flavor notes using multi-sensor arrays”
200. Elliott-Martin R J, Mottram T T, **Gardner JW**, Hobbs P J and Bartlett P N 1997 *J. Agri. Eng. Res.* **67** 267-275 “Method of sampling breath as a monitor of health in dairy cattle”
201. Heilig A, Barsan N, Weimar U, Schweizer-Berberich M, **Gardner JW** and Goepel W 1997 *Sensors and Actuators B* **43** 45-51 “Gas identification by modulating temperatures of tin dioxide based thick-film gas sensors”
202. Bartlett P N, Elliott J M and **Gardner JW** 1997 *Food Technology* **51** 44-48 “Electronic noses and their application within the food industry”
203. Bartlett P N and **Gardner JW** 1996 *Phil. Trans. Roy. Soc. London A* **354** 35-57 “Diffusion and binding of molecules to sites within homogeneous thin films”
204. Singh S, Hines E L, **Gardner JW** 1996 *Sensors & Actuators B* **30** 185-190 “Fuzzy neural computing of coffee and tainted water data from an electronic nose”
205. Udrea F and **Gardner JW** 1996 *Microelectronics Journal* **27** 449-457 “Design of a silicon microsensor array device for gas analysis”
206. **Gardner JW**, Hines E L and Pang C 1996 *Measurement & Control* **29** 172-178 “Detection of vapours and odours from a multisensor array using pattern recognition: self-organising adaptive resonance techniques”
207. Welham C J, **Gardner JW** and Greenwood, J W 1996 *Sensors and Actuators A* **52** 86-91 “A laterally driven micromachined resonant pressure sensor”
208. **Gardner JW** and Bartlett P N 1996 *Sensors and Actuators B* **33** 60-67 “Performance definition and standardisation of electronic noses”
209. Craven M A, **Gardner JW** and Bartlett P N 1996 *Trends in Analytical Chemistry* **15** 486-493 “Electronic noses - development and future prospects”
210. **Gardner JW** 1995 *Sensors and Actuators B* **27** 261-266 “Intelligent gas sensing using an integrated sensor pair”
211. Holmberg M, Winquist F, Lundstrom I, **Gardner JW** and Hines E L 1995 *Sensors and Actuators B* **26-27** 246-249 “Identification of paper quality using a hybrid electronic nose”
212. **Gardner JW**, Pike A, de Rooij N F, Koudelka-Hep M, Clerc P A, Hierlemann A and Gopel W 1995 *Sensors and Actuators B* **26** 135-139 “Integrated chemical sensor array for detecting organic solvents”
213. Tan T, Lucas Q, Moy L, **Gardner JW** and Bartlett P N 1995 *LC GC International* **8(4)** 218-225 “The electronic nose - a new instrument for sensing vapours”

214. **Gardner JW** 1995 *IEE Review*, Sept. 1995 185-188 "Microsensations"
215. **Gardner JW**, Bartlett P N and Pratt K F 1995 *IEE Proc.-Circuits Devices and Syst.* **142** 321-333 "Modelling of gas-sensitive conducting polymer devices"
216. **Gardner JW** and Bartlett P N 1995 *Sensors & Actuators A* **51** 1-10 "Application of conducting polymers in microsystems"
217. Tan T T, **Gardner JW**, Farrington J and Bartlett P N 1994 *International Journal of Electronics* **77** 173-184 "Electronic properties of metal-poly(pyrrole) junctions"
218. **Gardner JW** and Bartlett P N 1994 *Sensors and Actuators B* **18** 211-220 "A brief history of electronic noses"
219. **Gardner JW**, Pearce T C, Friel S, Bartlett P N and Blair N 1994 *Sensors and Actuators B* **18** 240-243 "A multisensor system for beer flavour monitoring using an array of conducting polymers and predictive classifiers"
220. Hines E L and **Gardner JW** 1994 *Sensors and Actuators B* **19** 661-664 "An artificial neural emulator for an odour sensor array"
221. **Gardner JW**, Chetwynd D G, Smith S T, Harb S M, Yao Z Q, Bartlett P N and Eastwick-Field V 1994 *Sensors and Actuators B* **41** 300-303 "Electropolymerised films for low friction microactuator bearings"
222. **Gardner JW** and Bartlett P N 1994 *Olfaction and Taste XI* (eds. K. Kurihara, N. Suzuki & H. Ogawa), Springer-Verlag, Tokyo, pp. 690-693 "Intelligent ChemSADs for artificial odour-sensing of coffees and lager beers"
223. **Gardner JW** and Bartlett P N 1994 *Technische Rundschau Wissen - Sonderpublikation Sensorik, July 1994*, pp. 62-67 "Prinzipien, Awendungen und Assichten der elektronischen Nasen"
224. Moy L, Mifsud JC and **Gardner JW** 1994 *Perfumer & Flavorist* **19** 11-15 "Monitoring the sensitivity of perfume and body odours with an electronic nose"
225. Pearce TC, **Gardner JW**, Friel S, Bartlett PN and Blair N 1993 *Analyst* **118** 371-377 "An electronic nose for monitoring the flavour of beers"
226. Hines EL, **Gardner JW**, Fung WW and Fekadu AA 1993 in *Neural Computing Research & Applications* (ed. G Orchard) IOP Publishing, Bristol, pages 267-271 "Improved rate of convergence in a MLP based electronic nose"
227. Mason JD, Hines EL and **Gardner JW** 1993 in *Artificial Neural Nets and Genetic Algorithms* (eds. RF Albrecht, CR Reeves, NC Steele), Springer-Verlag, New York, 107-111 "Analysis of electronic nose data using logical neurones"
228. Fekadu AA, Hines EL and **Gardner JW** 1993 in *Artificial Neural Nets and Genetic Algorithms* (eds. RF Albrecht, CR Reeves, NC Steele), Springer-Verlag, New York, 112-116 "Neural tree network based electronic nose"
229. Fekadu AA, Hines EL and **Gardner JW** 1993 in *Artificial Neural Nets and Genetic Algorithms*, (RF Albrecht, CR Reeves, NC Steele), Springer-Verlag, New York, 691-698 "Genetic algorithm design of neural network based electronic nose"
230. Moore SW, **Gardner JW**, Hines EL, Goepel W and Weimar U 1993 *Sensors & Actuators B* **15-16** 344-348 "A modified multilayer perceptron model for gas mixture analysis"
231. Corcoran P, Shurmer HV and **Gardner JW** 1993 *Sensors & Actuators B*, **15-16**, 32-37 "Integrated tin oxide sensors of low power consumption for use in gas and odour sensing"
232. **Gardner JW** and Bartlett PN 1993 *Synthetic Metals* **55-57** 3665-3670 "Design of conducting polymer gas sensors: modelling and experiment"
233. Smith ST, Harb S, Eastwick-Field V, Zao ZQ, Bartlett PN, Chetwynd DG and **Gardner JW** 1993 *Wear* **169** 43-57 "Tribological properties of electroactive polymeric thin film bearings"
234. Bartlett PN, Blair N and **Gardner JW** 1993 Association Scientifique Internationale sur le Cafe, 15^e Colloque, Montpellier, 616-625 "Electronic Noses: Principles, applications and outlooks"
235. Pearce TC and **Gardner JW** 1993 *Proc. of IEEE conference on Systems, Man and Cybernetics, Le Touquet, France, 17-20 October 1993, Vol. 5, pp.165-170, New York, IEEE*, "Machine olfaction: intelligent sensing of odours"

236. **Gardner JW**, Shurmer HV and Tan TT 1992 *Sensors & Actuators B* **6** 71-75 "Application of an electronic nose to the discrimination of coffees"
237. Shurmer HV and **Gardner JW** 1992 *Sensors & Actuators B* **8** 1-11 "Odour discrimination with an electronic nose"
238. **Gardner JW**, Hines EL and Tang HC 1992 *Sensors & Actuators B* **9** 9-15 "Detection of vapours & odours from a multisensor array using pattern recognition techniques. Part 2. Artificial neural networks"
239. **Gardner JW**, Iskandarani M and Bott B 1992 *Sensors & Actuators B* **9** 133-142 "Effect of electrode geometry on gas sensitivity of lead phthalocyanine thin films"
240. Dodd GH, Bartlett PN and **Gardner JW** 1991 *Biochemical Society Transactions* **19** 36-39 "Complex sensor systems: odour detection by the sense of smell by electronic noses"
241. **Gardner JW** 1991 *Sensors & Actuators B* **4** 109-116 "Detection of vapours and odours from a multisensor array using pattern recognition. Part 1: Principal component & cluster analysis"
242. **Gardner JW**, Shurmer HV and Corcoran P 1991 *Sensors & Actuators B* **4** 117-121 "Integrated tin oxide odour sensors"
243. **Gardner JW** and Bartlett PN 1991 *Nanotechnology* **2** 19-33 "Potential applications of electropolymerised thin organic films in nanotechnology"
244. Shurmer HV, Corcoran P and **Gardner JW** 1991 *Sensors & Actuators B* **4** 29-34 "Integrated arrays of gas sensors using conducting polymers with molecular sieves"
245. **Gardner JW** and Hines EL 1991 Proceedings of 6th Int. Conf. on Solid-State Sensors and Actuators, San Francisco, IEEE Press "Detection of vapours and odours by artificial neural networks"
246. **Gardner JW** 1990 *Sensors & Actuators* **B1** 166-170 "A non-linear diffusion-reaction model of electrical conduction in semiconductor gas sensors"
247. Shurmer HV, **Gardner JW** and Corcoran P 1990 *Sensors & Actuators B* **1** 256-260 "Intelligent vapour discrimination using a composite 12-element sensor array"
248. Bartlett PN, **Gardner JW** and Whitaker RJ 1990 *Sensors & Actuators A* **23** 911-915 "Electrochemical deposition of conducting polymers onto electronic substrates for sensor applications"
249. **Gardner JW**, Hines EL and Wilkinson M 1990 *Meas. Sci. Technol.* **1** 446-451 "The application of artificial neural networks in an electronic nose"
250. **Gardner JW** and Shurmer HV 1989 *Electronics & Wireless World* **95** 178-180 "Intelligent odour discriminating nose"
251. Shurmer HV, **Gardner JW** and Chan HT 1989 *Sensors and Actuators* **18** 361-371 "The Application of discrimination techniques to alcohols and tobaccos using tin oxide sensors"
252. **Gardner JW** 1989 *Sensors & Actuators* **18** 373-387 "Electrical conduction in solid-state gas sensors"
253. **Gardner JW** 1989 *Semicond. Sci. Technol.* **4** 345-350 "A diffusion-reaction model of electrical conduction in tin oxide gas sensors"
254. **Gardner JW** and Tan T T 1989 *J. Phys.: Condens. Matter* **1** SB133-138 "Properties of metal/poly-N-methylpyrrole schottky barriers"
255. Bryanston-Cross PJ and **Gardner JW** 1988 *Optics & Laser Engineering* **19** 85-100 "Holographic visualisation of a combustion flame"
256. Bryanston-Cross PJ and **Gardner JW** 1988 *Optics & Laser Technology* **20** 199-204 "Application of holographic interferometry to the vibrational analysis of a harpsichord"
257. **Gardner JW** 1987 *Tobacco Journal International* **2** 98-101 "Application of regression theory to experimental design of tobacco machinery"
258. **Gardner JW** and Adkins CJ 1985 *J. Phys. C: Solid State Physics* **18** 6523-6534 "Island charging energies and random potentials in discontinuous metal films"

259. Adkins CJ, Benjamin JD, Thomas JMD, **Gardner JW** and McGeown A J 1984 *J. Phys. C: Solid State Phys.* **17** 4633-4644 "Potential disorder in granular metal films"
260. **Gardner JW** 1984 *Int. J. Impact Engineering* **2** 345-356 "Calculation of the forces acting upon a rigid structure from an aircraft impact"
261. **Gardner JW** and Adkins CJ 1981 *Physica* **107B** 419-420 "Measurement of the density of states in discontinuous gold films"
262. Atkinson A and **Gardner JW** 1980 *Corrosion Science* **21** 49-58 "The diffusion of Fe³⁺ in amorphous SiO₂ and the protective properties of SiO₂ layers"
263. Brissenden S, **Gardner JW**, Illingworth J, Kovacevic I and Whitworth RW 1979 *Phys. Stat. Sol. (a)* **51** 521-526 "The effect of an electric field on the flow stress of crystals of NaCl"

III. PATENTS

264. Udrea F, Ali SZ, Hopper RH, **Gardner JW**, de Luca A 2020 *US Patent* Nr. 10,551,246 "IR detector array device"
265. Udrea F, Ali SZ, **Gardner JW** 2020 *US Patent* Nr. 10,527,571 "CMOS based semiconductor device on micro-hotplate and method of fabrication"
266. Cole M and **Gardner JW** 2019 *US Patent Application* Nr. 16/336,197 "Bulk acoustic wave resonator based sensor"
267. Udrea F, Ali SZ, Hopper RH, **Gardner JW**, de Luca A 2018 *US Patent App.* Nr. 10128302 13/11/18 "IR detector array device"
268. **Gardner JW** et al. Jan 2017 **Patent No. 17701921.3** "An IR detector array device"
269. **Gardner JW** et al. Jan 2017 **Patent No. 17701922.1** "An IR detector array device"
270. **Gardner JW**, Urasinska-Wojcik B, Xing Y Sept. 2016 UK Patent Application No. 80076GB1 "Infra-red device"
271. Cole M, **Gardner JW**, Villa-Lopez F Sept. 2016 UK Patent Application no. 80075GB1 "Bulk acoustic wave resonator sensor"
272. Ali S, Udrea F, **Gardner JW** et al., 2015 United States Patent 14/300,830 "Plasmonic IR devices" Granted Dec 2015.
273. Udrea F and **Gardner JW** 2012 **United States Patent Application 12/209214A** "IR Emitters and NDIR sensor", April 2012.
274. Udrea F and **Gardner JW** 2012 **United States Patent Application 12/210642** "IR detector", April 2012.
275. Udrea F and **Gardner JW** 2010 **United States Patent Application 12/691104** "Electro-migration reduction", 21 January 2010.
276. **Gardner JW**, Covington JA and Udrea F 2006 **UK Patent Application 0505192.5** "CMOS compatible tungsten micro heaters", April 2006.
277. **Gardner JW**, Udrea F and Covington J 2005 **GB Patent Application 0505192.5** "CMOS compatible tungsten micro heaters", 18 March 2005.
278. **Gardner JW** and Udrea F 2002 **European Patent 0953152**, "Smart MOSFET gas sensor", 22 May 2002.
279. **Gardner JW** and Udrea F 2000 **United States Patent Number: 6,111,280** "Gas sensing semiconductor devices", 29 August 2000.
280. Bartlett P N and **Gardner JW** 1995 **UK Patent Application No. 9514754.2** "Conducting Polymer Films", 16 July 1995.
281. Varadan V J and **Gardner JW** 1998 **PSU Inventive Discovery No. 98-1998** "Wireless, remotely-readable Smart Tongue and Nose Microsensor", 16 July 1995
282. Bartlett P N and **Gardner JW** 1994 *Patent Appl. No. 9400855.4* "Microsensor deposition device", January 1994.

283. Bartlett PN, Chetwynd DG, **Gardner JW** and Smith S T 1993 **UK Patent No. 9416444.9** "Low friction devices", 1 September 1994.
284. **Gardner JW** and Bartlett PN 1994 **Patent Application No. PCT/GB92/010410** "Device for Xing Y, Urasinska-Wojcik B, **Gardner JW** 2018 *IEEE International Instrumentation & Measurement Technology Conference, Houston, USA, 14-17 May 2018* "Plasmonic enhanced CMOS non-dispersive infrared gas sensor for acetone and ammonia detection"
285. Invited Speaker: Urasinska-Wojcik B, Xing Y, **Gardner JW** 2018 *Advanced Materials World Congress, Singapore, 4-8 Feb 2018* "Plasmonic enhanced CMOS non-dispersive infra-red gas detector"
286. **Gardner JW** and Bartlett PN 1993 *Patent Appl. No. W093/03355* "Device for sensing volatile materials", February 1993.
287. Udrea F and **Gardner JW** 1998 **UK Patent GB 2321336A** "Smart MOSFET gas sensor", Published 22.7.98, Date of filing 15.1.97. **International Publication Number: WO 98/32009** "Gas-sensing semiconductor devices", 23 July 1998
288. Udrea F and **Gardner JW** 1998 **International Publication Number: WO 98/32009** "Gas sensing semiconductor devices" 22 July 1998
289. Cahill M, Dawson J and **Gardner JW** 1991 *US Patent No. 5,000,323* "Segregating apparatus"
290. Brink A, Cahill M, Dawson J, **Gardner JW** and Thierry A 1989 *US Patent No. 436,936* "Suction rejection"
291. Dawson J and **Gardner JW** 1988 *UK Patent Application No. GB8802974* "Single rod rejection device"
292. Brink A, Cahill M, Dawson J, **Gardner JW** and Thierry A 1988 *UK Patent Application No. GB8821652* "Suction rejection"

IV. KEYNOTE, INVITED & CONFERENCE PAPERS

293. Specht J, Esfahani S, Xing Y, Cole M, **Gardner JW** 2020 *IEEE International and Measurement Xing Y and Gardner JW 2022 IEEE International Symposium on Olfaction and Electronic Nose (ISOEN), 2022*, pp. 1-3, doi: 10.1109/ISOEN54820.2022.9789601. "Classification of urine odour using machine learning methods,"
294. Specht JP, Esfahani S, ... **Gardner JW** 2021 *Proc Transducers* pp1396-1399 "CMOS compatible AlN SMR with an integrated micro-heater for temperature modulation"
295. Esfahani S, Shanta M, ... **Gardner JW** 2020 *IEEE Sensors Conference* "Wearable IoT electronic nose for urinary incontinence detection"
296. Esfahani S, Rollins P, ... **Gardner JW** 2020 *IEEE Sensors Conference* "Smart city operated IoT based indoor air quality monitoring system"
297. Specht J, Esfahani S, Xing Y, Cole M, **Gardner JW** 2020 *IEEE International and Measurement Technology Conference (I2MTC), 1 June*. "Characterisation of zinc oxide thin-film solidly mounted resonators for particle sensing in air"
298. Jones R, **Gardner JW**, de Luca A, Longobardi G, Udrea F 2020 *ECS Meeting Abstracts 26 p1849, IOP Publishing, 30, p2261*. "GaN-on-Si calorimetric thermal conductivity gas sensor"
299. Xing Y and **Gardner JW** 2020 *ECS Meeting Abstracts 26 p1849, IOP Publishing*. "Classification of urine odour using artificial neural networks"
300. *Technology Conference (I2MTC), 1 June*. "Characterisation of zinc oxide thin-film solidly mounted resonators for particle sensing in air"
301. Jones R, **Gardner JW**, de Luca A, Longobardi G, Udrea F 2020 *ECS Meeting Abstracts 26 p1849, IOP Publishing, 30, p2261*. "GaN-on-Si calorimetric thermal conductivity gas sensor"
302. Gardner E, de Luca A, Vincent T, Jones R, **Gardner JW**, Udrea F 2019 *IEEE Sensors*, 1st April. "Thermal conductivity sensor with isolating membrane holes"
303. Jones G, Vincent T, de Luca A, **Gardner JW** et al. 2019 *IEEE Sensors*, 1st April. "GaN-on-Si thermoresistive flow sensor with gold hot-wire"

304. Farazmand MH, **Gardner JW**, Charmet J 2019 *MicroTAS, Basel, 27-31 Oct 2019* “Design and development of a fluidic and electrical interface for a disposable lab-on-a-chip”
305. Farazmand MH, **Gardner JW**, Charmet J 2019 *41st Annual Int. Conf. IEEE Engineering in Medicine & Biology, Berlin, 23-27 July 2019, pp1579-1583*. “Design and development of a disposable lab-on-a-chip for prostate cancer detection”
306. Farazmand MH, **Gardner JW**, Charmet J 2019 *Biofabrication and Biomanufacturing Conference, Rotterdam, 20-21 June 2019* “Design and development of a fluidic and electrical interface for a disposable lab-on-a-chip”
307. Kock A, Wimmer-Teubenbacher R, **Gardner JW** et al. 2019 *Transducers & Eursensors XXXIII, Berlin, 23-27 June, pp1136-1139*. “3D-integrated multi-sensor demonstrator system for environmental monitoring”
308. Lopez FH, Cole M, ... **Gardner JW** 2019 *Proc Transducers pp1242-1245* “A solidly mounted resonator with CMOS fabricated acoustic mirror for low-cost air quality monitoring”
309. Xing Y, Cole M and **Gardner JW** 2019 *Proc Transducers pp1090-1093* “Identification of urine odours using CMOS based metal oxide resistive gas sensors”
310. **Gardner JW** and Xing Y 2019 7th Int. Workshop on Bioinformatics & Biomedical Engineering, 8-10 May 2019 “Classification of urine smell from CMOS based odour sensor array and artificial neural networks”
311. Vincent TA, Xing Y, Cole. M, **Gardner JW** 2018 *Eurosensors XXXII, Graz, Austria, 9-12 Sept 2018* “Thermal modulation of a high bandwidth gas sensor array in real-time for application on a mobile robot”
312. Xing Y, Urasinska-Wojcik B, **Gardner JW** 2018 *IEEE International Instrumentation & Measurement Technology Conference (I2MTC), Houston, USA, 14-17 May 2018* “Plasmonic enhanced CMOS non-dispersive infrared gas sensor for acetone and ammonia detection”
313. Invited Speaker: **Gardner JW** 2018 6th Int. Symp. of Dialogue for Global Innovation, Cambridge, 2 Nov 2018 “Electronic Nose for Environmental & Healthcare Monitoring”
314. Invited Speaker: Urasinska-Wojcik B, Xing Y, **Gardner JW** 2018 *Advanced Materials World Congress, Singapore, 4-8 Feb 2018* “Plasmonic enhanced CMOS non-dispersive infra-red gas detector”
315. Santra S, de Luca A, Guha PK, Udrea F, Ray SK, **Gardner JW** 2017 *IEEE Sensors Conference, Glasgow, UK, 29 Oct - 1 Nov 2017* “Integration of Au-SnO₂ nanocomposites with power efficient MEMS substrate for acetone detection”
316. Villa-Lopez F, Cole M, Thomas S, **Gardner JW** 2017 *IEEE Sensors Conference, Glasgow, UK, 29 Oct - 1 Nov 2017* “Indoor air quality monitor based on solidly-mounted resonators for the detection of VOCs”
317. Xing W, Shah A, Urasinska-Wojcik B, **Gardner JW** 2017 *IEEE Sensors Conference, Glasgow, UK, 29 Oct - 1 Nov 2017* “Prediction of impurities in hydrogen fuel supplies using a thermally-modulated CMOS gas sensor”
318. Xing Y, Vincent TA, Cole M, **Gardner JW** et al. 2017 *IEEE Sensors Conference, Glasgow, UK, 29 Oct - 1 Nov 2017* “Multi-sensor unit on mobile robot for unsupervised gas discrimination in harsh environments”
319. Vincent T, Xing Y, Cole M, **Gardner JW** 2017 *Eurosensors, Paris, 3-6 Sept 2017* “High bandwidth sensor module for mobile robot applications – wind tunnel characterisation”
320. Invited paper: **Gardner JW** 2017 *Smart Chemical and Biological Sensing Technologies, RSC, London, 16th June 2017* “CMOS gas sensors for Healthcare”
321. **Gardner JW** and Vincent TA 2017 *ISOEN, Montreal, Canada, 28-31 May 2017* “Towards point of care human energy expenditure measurement on a hand-held breath analyser”
322. Santra S, De Luca A, Guha PK, Udrea F, **Gardner JW**, Ray SK 2017 *E-MRS Spring Meeting, Strasbourg, France, 22-26 May 2017* “Integration of Au-SnO₂ thick film with power efficient CMOS MEMS substrate for acetone sensing”

323. Gammon PM, Li F, Chan CW, Gity F, Trajkovic T, Kilchytska V, Pathirana V, Udugampola, Ben Ali K, Flandre D, **Gardner JW** and Mawby PA 2017 *EUROSOI 2017*, 3-5 April, Athens, Greece “Design and fabrication of a novel power Si/SiC LDMOSFET for high temperature applications”
324. **Gardner JW** and Vincent TA 2017 *ISOCS Winter School, Sniffphone, Ponte di Legno, Italy, 5-10 March 2017* “Development of a handheld side-stream breath analyser for Point-of-Care metabolic rate measurement”
325. De Luca A, Ali SZ, Hopper RH, Boual S, **Gardner JW**, and Udrea F, *MEMS 2017, Las Vegas, USA, 22-26 January 2017* “Filterless non-dispersive infra-red gas detection: a proof of concept”
326. Invited Paper: **Gardner JW**, Chowdhury MF, Ali SZ, Udrea F 2016 *MiNaB-ICT on Sensing for Smart Anything Everywhere, Otranto, Italy, 25-29 June 2016* “Low cost thermopile for gesture detection”
327. Gammon PM. Li F, Chan CW, Sanchez A, Hindmarsh S, Gity F, Trajkovic T, Kilchytska V, Pathirana V, Camuso G, Ben Ali K, Flandre D, Mawby PA, **Gardner JW** 2016 *11th Euro. Conf. on SiC and Related Materials (ECSCRM 2016), Halkidiki, Greece, 25-29 Sept 2016* “Silicon-on-silicon carbide power devices for harsh environment applications”
328. Gammon P, Chan CW, Gity F, Trajkovic T, Kilchytska V, Fan L, Pathirana V, Camuso G, Udugampola N, Ben Ali K, Flandre D, Mawby PA, **Gardner JW** *ESDC 2016* “Design and fabrication of silicon-on-SiC substrates and power devices for space applications”
329. Thomas S, Cole M, Villa-Lopez FH, **Gardner JW**, Peters J, Theunis J 2016 *IEEE Sensors Conference, Florida, USA, 30 Oct - 2 Nov 2016* “A low-cost acoustic micro-sensors based system-in-package for air quality monitoring”
330. Avramescu V, De Luca A, Brezeanu M, Ali SZ, Udrea F, Buiu O, Cbianu C, Serban, B, **Gardner JW**, Dumitr V, Stratulat A 2016 *ESDERC, Lausanne, Switzerland, 12-15 September 2016* “CMOS compatible SOI micro-hotplate based oxygen sensor”
331. Urasinska-Wojcik B, Vincent TA, **Gardner JW** 2016 *Euroensors, Budapest, Hungary, 4-7 September 2016* “H₂S sensing properties of WO₃ based gas sensor”
332. Vincent TA, **Gardner JW**, Chappell MJ, Hattersley JG, Wilson A 2016 *Euroensors, Budapest, Hungary, 4-7 September 2016* “Measurement of energy expenditure on a smartphone using a handheld breath analyser”
333. Chowdhury MF, Hopper R, Ali SZ, **Gardner JW**, Udrea F 2016 *Euroensors, Budapest, Hungary, 4-7 September 2016* “MEMS infrared emitter and detector for capnography applications”
334. De Luca A, Ali SZ, hopper R, Boual S, Chowdhury MF, **Gardner JW**, Udrea F 2016 *IUMRS-ICEM, Suntec, Singapore, 4-8 July 2016* “CMOS plasmonic devices for non-dispersive infrared gas sensors”
335. **Gardner JW**, Xing Y, Urasinska-Wojcik B, de Luca A, Udrea F 2016 *7th Int. Conf. on Metamaterials, Photonic Crystals and Plasmonics (META 2016), Malaga, Spain, 25-28 July 2016* “Design of plasmonic structures in CMOS technology for low-cost enhanced infra-red gas sensors”
336. Vincent TA, Wilson A, Hattersley JG, Chappell MJ, **Gardner JW** 2016 *Int. Work-conf. on Bioinformatics and Biomedical Engineering (IWBBIO), Granada, Spain, 20-22 April 2016* “Development of a hand-held side-stream breath analyser for point of care metabolic rate measurement”
337. Vincent T, Urasinska-Wojcik B, and **Gardner JW** 2015 *Euroensors, Bremen, Germany, Sept. 2015* “Development of a NDIR sensor system for the ppm detection of carbon dioxide in exhaled breath analysis”
338. Vincent T, Wilson A, Hattersley J, Chappell M, and **Gardner JW** 2015 *Int. Symp. Olfaction & Electronic Noses July 2015, Dijon, France* “Design and modelling of a handheld side-stream breath sampling system for metabolic rate analysis”
339. Invited Paper: Chowdhury M, Udrea F and **Gardner JW** 2015 *AMA Fourth Scientific Meeting EuNetAir, June 2015, Linkoping University, Sweden* “Benefits of CMOS sensors for environmental monitoring”

340. Chowdhury MF, **Gardner JW**, and Udrea F 2015 *EU COST action TD1105, New Sensing Technologies for Air Pollution Control and Environmental Sustainability, Riga, March 2015* “CMOS sensor systems for air quality monitoring”
341. Ali SZ, de Luca A, Racz Z, Tremlett P, Wotherspoon T, **Gardner JW**, and Udrea F 2014 *IEEE SENSORS 2014, Valencia, Spain 2-5 November 2014* “Low power NDIR CO₂ sensor based on CMOS IR emitter for boiler applications”
342. Villa-López FH, Thomas S, Ludurczak W, Cole M, **Gardner JW** 2014 *IEEE SENSORS 2014, Valencia, Spain 2-5 November 2014* “Finite element modelling of particle sensors based on solidly mounted resonators”
343. Invited Paper: Gardner JW *EU COST Action EuNetAir, Brescia, Italy, 10 September 2014* “Smart sensors in mobile phones for environmental monitoring applications”
344. Santra S, Sinha AK, Ray SK, Ali SZ, Udrea F, **Gardner JW** and Guha PK 2014 *EuroSensors, Brescia, Italy, 7-10 September 2014* “Room temperature carbon nanotube ammonia sensor on CMOS platform”
345. de Luca A, Cole MT, Hopper RH, Ali SZ, Udrea F, **Gardner JW** and Milne WI 2014 *EuroSensors, Brescia, Italy, 7-10 September 2014* “SOI CMOS MEMS infra-red thermal source with carbon nanotubes coating”
346. Hopper R, Ali SZ, Chowdhury MF, de Luca A, **Gardner JW** and Udrea F 2014 *EuroSensors, Brescia, Italy, 7-10 September 2014* “CMOS-MEMS thermopile with an integrated temperature sensing diode for thermometry applications”
347. Vincent TA, Wilson A, Hattersley JG, Chappell MJ and **Gardner JW** 2014 *EuroSensors, Brescia, Italy, 7-10 September 2014* “Design and modelling of a portable breath analyser for metabolic rate measurement and respiratory disease investigation”
348. Thomas S, Cole M, de Luca A, Torrisi F, Ferrari AC, Udrea F and **Gardner JW** 2014 *EuroSensors, Brescia, Italy, 7-10 September 2014* “Graphene-coated Rayleigh SAW resonators for NO₂ detection”
349. Thomas S, Villa-Lopez FH, Ludurczak W, Cole M and Gardner JW 2014 *EMRS, Lille, France, 26-30 May 2014* “Design, modelling and development of low-cost, high-frequency piezoelectric particle sensor”
350. Invited Paper: Chowdhury MF, **Gardner JW**, Udrea F, Ali SZ and Stacey S 2014 *2nd International Workshop EuNetAir, Brindisi, Italy, 25-26 March 2014* “CMOS-based sensors for ubiquitous gas detection: challenges and opportunities”
351. Invited Paper: **Gardner JW** 2014 *International Symposium of Olfaction & Chemical Sensors Winter School, Les Houches, France, 9-14 February 2014* “Electronic noses and their application”
352. Thomas S, Cole M and **Gardner JW** 2013 *Proc. New Sensing Technologies for Air Pollution Control and Environmental Sustainability, 18-20 December, Cambridge* “Particulate matter detection based on acoustic resonators for air quality monitoring”
353. Udrea F, **Gardner JW**, Chowdhury MF, Ali SZ and Poenaru I 2013 *Workshop, Munich, Germany November 2013* “MEMS CMOS broadband mid-infrared source”
354. De Luca A, Racz Z, Cole MT, Ali SZ, Udrea F, **Gardner JW** and Milne WI 2013 *Proc. IEEE Sensors Conference, 3-6 November, Baltimore, USA* “In situ grown carbon nanotubes for enhanced CO₂ detection in non-dispersive infra-red system”
355. Thomas S, Racz Z, Cole M, and **Gardner JW** 2013 *Proc. IEEE Sensors Conference, 3-6 November, Baltimore, USA* “Dual high-frequency surface acoustic wave resonator for ultrafine particle sensing”
356. Ghadar A, **Gardner JW** and Dowson C 2013 *Proc. IEEE Sensors Conference, 3-6 November, Baltimore, USA* “Precision transducer for fluorescence-based immunoassays”
357. Invited Paper: **Gardner JW** 2013 *Proc. ESSDERC, Bucharest, Romania, 16-20 September 2013*, “MEMS and Sensors – emerging technologies and applications”

358. Avramescu V, de Luca A, Brezeanu M., Ali SZ, Udrea F, Buiu O, Cobianu C, Serban B, **Gardner JW** et al 2013 *Proc. ESSDERC, Bucharest, Romania, 16-20 September 2013*, “Resistive oxygen sensor based on CMOS-compatible SOI micro-hotplate”
359. Pearce TC, Karout S, Racz Z, Capurro A, **Gardner JW** and Cole M 2013 *1st International Workshop on Odor Spaces, Hannover, Germany, 4-7 September 2013* “Rapid processing of chemosensor transients in a neuromorphic implementation of the insect macroglomerular complex”
360. Thomas S, Racz Z, Cole M, **Gardner JW** 2013 *Proc. IEEE CENICS, Barcelona, Spain, 25-28 August 2013* “High-frequency One-port Colpitts SAW Oscillator for Chemical Sensing”
361. Plenary Paper: **Gardner JW** *Proc. ISOEN 2-5 July 2013, Korea* “A biomimetic olfactory system: insect-based info-chemical communication”
362. Milne WI, Cole MT, DeLuca A, Ali SZ, **Gardner JW**, Udrea F, Stokes R 2013, *Proc. 7th International Conference on Materials for Advanced Technologies (ICMAT 2013) 30 June to 5 July* “SOI platform for smart microsensors”
363. **Gardner JW** et al. 2013 *Proc. Transducers, Barcelona, Spain, 16-20 June 2013* “Graphene SOI CMOS sensors for detection of ppb levels of NO₂ in air”
364. Invited Paper: **Gardner JW** 2013 *Public lecture at UTM, Malaysia, 28th March 2013* “Bioelectronic microsystems in CMOS”
365. Santra S, Guh PK, Ray SK, Udrea F and **Gardner JW** 5th *International Nanoelectronics Conference, Singapore, 2-4 January 2013* “SOI CMOS integrated zinc oxide nanowire for toluene detection”
366. Cole M, Racz Z, **Gardner JW** and Pearce TC 2012 *Proc. IEEE Sensors conference, 28-31 October 2012, Taiwan, pp2219-2222* “A novel biomimetic infochemical communication technology: from insects to robots”
367. Invited Paper: Udrea F, Ali SZ, Brezeanu M, Dumitru V, Buiu O, Poenaru I, Chowdhury MF, Luca A, **Gardner JW** 2012 *IEEE International semiconductor conference (CAS) 2012, Sinaia, Romania, 15-17 October 2012* “SOI sensing technologies for harsh environment”
368. Garcia-Guzman J, Cole M, **Gardner JW**, Mendoza-Gutierrez 2012 *Proc. Eurosensors conference, Poland, 9-12 September 2012* “Multiphysics modelling of a resistive polymeric sensor for VOC”
369. Santra S, Guha PK, Ray SK, Ali SZ, Udrea F, **Gardner JW** 2012 *IEEE Nano 2012 conference, UK, 20-23 August 2012* “Carbon nanotube integration on a fully processed CMOS MEMS wafers and their NO₂ response”
370. Invited Paper: **Gardner JW** 2012 Special session for EU EUNetAir at *IMCS 2012, Nuremberg, German, May 20-23* “New Approaches to Chemical Sensing for Application in Environmental Monitoring”
371. Thomas S, Li Tai Leong S, Rácz Z, Cole M and **Gardner JW** 2012 *IMCS 2012, Nuremberg, German, May 20-23* “Design and Implementation of a High-Frequency Surface Acoustic Wave Sensor Array for Pheromone Detection in an Insect-inspired Infochemical Communication System”
372. Cole M, Thomas S, Racz Z, **Gardner JW**, Jordan M, and Challis J 2012 *Biosensors 2012, Cancun, Mexico, May 15-18* “Cell-based surface acoustic wave sensor with transfected olfactory receptors OR67d and OR22a for a highly specific chemo-receiver”
373. Invited Paper: **Gardner JW** 2012 *Irish Forum on Future of Integrated Sensors, SRC, Dublin, Ireland, March 22-24*, “Microsensors for electronic nose and tongue”
374. **Gardner JW** et al. 2012 *Proc. Biomedical Engineering 2012, Innsbruck, Austria, Feb 15-17*, “Classification of field asymmetric ion mobility spectrometry data for detection of bowel bacteria”
375. **Gardner JW**, Ahmed T, Moseley P, Ali SZ, Chowdhury M and Udrea F 2011 *Proc. Eurosensors XXV, Athens, Greece, September 4-7* “High temperature robust SOI ethanol sensor”
376. Vivanos JL, Racz Z, Cole M, Soto J and **Gardner JW** 2011 *Proc. Eurosensors XXV, Athens, Greece, September 4-7* “Detergents sensing system based on SH-SAW devices”

377. Guha P, Santra S, Covington J, Udrea F and **Gardner JW** 2011 *Proc. Eurosensors XXV, Athens, Greece, September 4-7* “Zinc oxide nanowire based hydrogen sensor”
378. Racz Z, Cole M, **Gardner JW**, Pathak S, Jordan M, and Challiss RA 2011 *Proc. Transducers 11, Beijing, China June 5-9* “Cell-based surface acoustic wave resonant microsensor for biomedical agent detection”
379. Pathak S, Jordan M, Racz Z, Challiss RA, **Gardner JW** and Cole M 2011 *Proceedings of EU FET Conference, May 4-6, Budapest, Hungary* “Detection of ligand-elicited secondary cellular responses using surface acoustic wave biosensors”
380. Karout S, Racz Z, Capurro A, Cole M, **Gardner JW** and Pearce TC 2011 *Proc. 14th Int Symp on Olfaction and Electronic Nose, New York, May 3-5 AIP Conf. Proc. 1362 77-78* “Ratiometric chemical blend processing with a neuromorphic model of the insect macroglomerular complex”
381. Aziz M, Che Harun F, Covington J and **Gardner JW** 2011 *Proc. 14th Int Symp on Olfaction and Electronic Nose, New York, May 3-5 AIP Conf. Proc. 1362 223-224* “Towards an analogue neuromorphic VLSI instrument for the sensing of complex odours”
382. Covington J, Ouaret N, **Gardner JW**, et al. 2011 *Proc. 14th Int Symp on Olfaction and Electronic Nose, New York, May 3-5 AIP Conf.* “Detection and identification of inflammatory bowel disease by electronic nose”
383. Ali SZ, Ho W, Chowdhury F, Covington J, Moseley P, Saffell J, **Gardner JW** and Udrea F 2011 *Proc. 14th Int Symp on Olfaction and Electronic Nose, New York, May 3-5 AIP Conf. Proc. 1362 53-54* “A high temperature SOI CMOS NO₂ sensor”
384. **Gardner JW** and Taylor JE 2011 *Proc. Biomedical Engineering, February 16-18, Innsbruck, Austria* “Novel convolution based signal processing technique for an artificial olfactory mucosa”
385. Garcia-Guzman, **Gardner JW** and Cole M 2010 *Proc. Eurosensors XXIV, September 5-8 2010, Linz, Austria* “A duo-type smart gas sensor ASIC chip for use with resistive materials”
386. Invited Paper: **Gardner JW** 2010 *3rd IBEC Symposium on Bioengineering and Biomedicine, Barcelona, Spain, 9-10 April 2010* “Artificial olfaction: a Warwick perspective”
387. Invited Paper: **Gardner JW** 2010 *EC FP7 COST nanoTP Workshop, Berlin, Germany, 18-19 March 2010* “CMOS based gas sensors: progress and problems”
388. Invited Paper: **Gardner JW** *Proceedings of EC Advanced Workshop on Infochemical Communication, Granada, Spain, 10-11 March 2010* “Smart piezoelectric chemoreceiver”
389. Cole M, **Gardner JW**, Pathak S, Racz Z, Challiss R and Markovic D 2010 *Proceedings of 7th IASTED International Conference on Biomedical Engineering, Innsbruck, Austria, 17-19 Feb, 2010, pp.195-201* ISBN: 978-0-88986-826-7 “Cell-based acoustic sensors for biomedical applications”
390. Covington JA and **Gardner JW** 2009 *Olfaction and Electronic Nose: Proceedings of the 13th International Symposium*, edited by M. Pardo and G. Sberveglieri, American Institute of Physics 978-0-7354-0674-2/09 “Carbon nanomaterial polymer composite ChemFET and chemoresistors for vapour sensing”
391. Taylor JE, Che Harun FK, Covington JA, and **Gardner JW** 2009 *Olfaction and Electronic Nose: Proceedings of the 13th International Symposium*, edited by M. Pardo and G. Sberveglieri, American Institute of Physics 978-0-7354-0674-2/09 “Applying convolution-based processing methods to a dual-channel, large array artificial olfactory mucosa”
392. Udrea F, Santra S, Guha PK, Ali SZ, Covington JA, Milne WI, **Gardner JW**, Maeng S 2009 *Olfaction and Electronic Nose: Proceedings of the 13th International Symposium*, edited by M. Pardo and G. Sberveglieri, American Institute of Physics 978-0-7354-0674-2/09 “Nanotubes and nanorods on CMOS substrates for gas sensing”
393. Santra S, Ali SZ, Guha PK, Herala P, Unalan HE, Dala SH, Covington JA, Milne WI, **Gardner JW**, Udrea F 2009 *Olfaction and Electronic Nose: Proceedings of the 13th International Symposium*, edited by M. Pardo and G. Sberveglieri, American Institute of Physics 978-0-7354-0674-2/09 “CMOS alcohol sensor employing ZnO nanowire sensing films”

394. Cole M, **Gardner JW**, Racz Z, Pathak Guerrero SA, Muñoz L, Carot G, Pearce TC, Challiss J, Markovic D, Hansson BS, Olsson S, Kübler L 2009 *Proceedings of IEEE Sensors Conference*, 978-1-4244-5335-1/09 “Biomimetic insect infochemical communication system”
395. Ali SZ, Santra S, Haneef I, Schwandt C, Kumar RV, Milne WI, Udrea F, Guha PK, Covington JA, **Gardner JW** 2009 *Proceedings of IEEE Sensors Conference*, 978-1-4244-5335-1/09 “Nanowire hydrogen gas sensor employing CMOS micro-hotplate”
396. Iwaki T, Covington JA, **Gardner JW**, Udrea F 2009 *Proceedings of Transducers, Denver, CO, USA, June 21-25, 2009*, pp592-592 “Novel dual transient temperature modulation technique for multi-vapour detection”
397. Cole M, **Gardner JW**, Pathak S, Pearce TC, Racz Z 2009 *Procedia Chemistry* **1** 305-308, Proceedings of the Eurosensors XXIII conference, Lausanne “Towards a biosynthetic infochemical communication system”
398. Che Harun FK, Covington JA, **Gardner JW** 2009 *Procedia Chemistry* **1** 911-915, Proceedings of the Eurosensors XXIII conference, Lausanne “Portable e-Mucosa System: Mimicking the biological olfactory”
399. **Gardner JW**, Nadarajan S and Kimber P, *Proceedings 6th IASTED International Conf Biomedical Engineering*, 13-15 February 2008, Austria, pp145-150, ISBN:978-0-88986-721-5 “Modelling and measurement of odour transportation within the human nasal cavity”
400. Invited Paper: **Gardner JW**, Southampton Electrochemistry Society, 7-8 April 2008 “The electronic nose; the early days”
401. Che Harun FK, Taylor JE, Covington JA and **Gardner JW** *Proceedings 12th International Meeting on Chemical Sensors*, 13-16 July 2008, Ohio, 296-297 “Dual channel odour separation columns with large chemosensor arrays for advanced odour discrimination”
402. Leonte I, Cole M and **Gardner JW** *Proceedings Eurosensors XXII*, 7-10 September 2008, Germany, pp558-561 “Multivariate analysis of SH-SAW based e-tongue sensors”
403. Santra S, Guha PK, Ali SZ, Haneef I, Udrea F, and **Gardner JW**, "SOI Diode Temperature Sensor Operated at Ultra High Temperatures – A Critical Analysis," *Proceedings of the 7th IEEE Conference on Sensors*, 26-29 October, Lecce, 2008, pp. 78-81.
404. Cole M, Leonte II, **Gardner JW**, and Hesketh P, "Identification of taste solutions and their binary mixtures using SH-SAW resonator-based taste sensor," *Proceedings of the 7th IEEE Conference on Sensors*, 26-29 October, Lecce, 2008, pp. 1556-1559.
405. Invited Paper: Udrea F, Santra S and **Gardner JW**, “CMOS temperature sensors – concepts, state-of-the-art and prospects” *Proceedings of IEEE Conference CAS*, 13-18 October, Romania, 2008, pp31-40.
406. Udrea F, Ali SZ and **Gardner JW**, “CMOS micro-hotplate array design for nanomaterial-based gas sensors” *Proceedings of IEEE Conference CAS*, 13-18 October, Romania, 2008, pp143-146.
407. Best Poster Award: Santra S, Ali SZ, Guha PK, Udrea JW, Gardner JW and Milne WI “Carbon nanotube gas sensor integrated on CMOS substrate” *Cambridge CNT Symposium*, 11 December, Cambridge, 2008.
408. **Gardner JW**, Covington JA, Tan SL and Pearce TC *GOSPEL Workshop on Bio-inspired Signal Processing, Barcelona, Spain, 24-26 January 2007*, “A biologically-inspired artificial olfactory mucosa”
409. **Gardner JW**, Apostolidou A, Cole M, Dowson C, Edmunds S, and Sehra G, *Proc. Biomedical Engineering 2007*, Austria, Feb 2007. “Towards a low-cost optical biosensor system for biomedical immunoassay applications”
410. Cole M, Mutukwa SS, Briand D, de Rooij NF and **Gardner JW** *Proceedings of ISOEN, St. Petersburg, Russia, 3-5 May 2007* “SH-SAW dual delay line based e-tongue system with improved discrimination capabilities”
411. **Gardner JW**, Tan SL, Covington JA and Pearce TC, *Technical Digest of Transducers and Eurosensors 2007*, pp 2465-2467, Lyon, France, June 10-14, 2007 “Enhanced discrimination of complex odours based upon spatio-temporal signals from a micro-mucosa”

412. **Gardner JW** and Taylor JE, *Technical Digest of Transducers and Eurosensors 2007*, pp 2473-2476, Lyon, France, June 10-14, 2007 “Novel convolution based signal processing techniques for a simplified artificial olfactory mucosa”
413. Tan SL, Covington JA, **Gardner JW** and Pearce TC, *AsiaSim 2007*, Seoul, Korea, October 10-12, 2007 “Finite element simulation of biomimetic olfactory microsystem for spatio-temporal signal generation”
414. Iwaki T, Covington JA and **Gardner JW**, *Proc. of IEEE Sensors 2007 conference*, pp 1229-1232, Atlanta, USA, October 28-21, 2007 “Identification of vapours using a single carbon black/polymer composite sensor and a novel temperature modulation technique”
415. Che Harun FK, King PH, Covington JA and **Gardner JW**, *Proc. of IEEE Sensors 2007 conference*, pp 1361-1363, Atlanta, USA, October 28-21, 2007 “Novel gas chromatographic microsystem with very large sensor arrays for advanced odour discrimination”
416. Udrea F, Maeng S, **Gardner JW** et al., *Proc. of IEEE Electron Devices Meeting*, pp 831-834, Washington DC, USA, December 9-12, 2007 “Three technologies for a smart miniaturized gas sensor: SOI CMOS, micromachining and CNTs – challenges and performance”
417. **Gardner JW**, Beeby L, Chappell M, Udrea F, Yates J and Dowson CG, *Proc. of the 24th IASTED International Multi-conference Biomedical Engineering*, 15-17 Feb. 2006, “Identification of staphylococcus aureus infections by volatile chemical headspace analysis”
418. Invited Paper: **Gardner JW**, CAPE lecture series, University of Cambridge, UK, 31 March 2006, “Microsensors and MEMS for chemical and biological detection”
419. Covington JA, Tan SL, Pearce TC, Hamilton A and **Gardner JW**, *Proc. of IET Seminar on MEMS Sensors & Actuators*, 27-28 April 2006, London, UK, 107-112 “Towards a truly biomimetic olfactory microsystem: an artificial olfactory mucosa”
420. Koickal TJ, Hamilton A, Pearce TC, Tan SL, Covington JA and **Gardner JW**, *Proc. IEEE Circuits & Systems Symposium (ISCAS 2006)*, May 2006, “Analog VLSI design of an adaptive neuromorphic chip for olfactory systems”
421. Keynote Paper: **Gardner JW**, *Eurosensors XX, Gothenberg, Sweden, Sept. 2006*. “Technologies for chemical sensors and microsystems”
422. **Gardner JW**, Covington JA, Tan SL, and Pearce TC, *Eurosensors XX, Gothenberg, Sweden, Sept. 2006*. “A biologically inspired artificial olfactory mucosa”
423. Guha PK, Ali SZ, Udrea F, Milne WI, Iwaki T, Covington JA and **Gardner JW**, *Eurosensors XX, Gothenberg, Sweden, Sept. 2006*. “Novel design and characterisation of SOI CMOS micro-hotplates for gas sensors”
424. Khawaja J, Cole M, **Gardner JW**, *Eurosensors XX, Gothenberg, Sweden, Sept. 2006*. “Gold nanoparticle CMOS sensor for VOC detection”
425. Iwaki T, Covington JA, **Gardner JW**, Udrea F, Blackman CS and Parkin IP, *Proc. IEEE Sensors Conference, Korea, Oct. 2006*. “SOI-CMOS based single crystal silicon micro-heaters for gas sensors”.
426. Ali SZ, Guha PK, Lee CC, Udrea F, Milne WI, Iwaki T, Covington JA and **Gardner JW**, *Proc. IEEE Sensors Conference, Korea, Oct. 2006*. “High temperature SOI CMOS tungsten micro-heaters”
427. **Gardner JW**, Cole M, Dowson CG, Newton P and Sehra G, *IASTED International Conference on Biomedical Engineering*, Innsbruck, Austria, 16-18 Feb 2005 “Smart acoustic sensor for the detection of bacteria in milk”
428. Pearce TC, Covington JA, Tan SL, **Gardner JW**, Koickal TJ and Hamilton A, *IEEE Neural Engineering Conference*, Washington, USA 16-19 March 2005 “Silicon based neuromorphic implementation of the olfactory bulb”
429. Acevedo J, Maldonado S, Al-Khalifa S, Gil P, and **Gardner JW**, *11th International Symposium on Olfaction and Electronic Noses*, Barcelona, Spain, 13-15 April 2005 “Design of a programmable, portable low cost electronic nose”

430. Pardo M, Sberveglieri G and **Gardner JW**, *11th International Symposium on Olfaction and Electronic Noses*, Barcelona, Spain, 13-15 April 2005 “Benchmarking feature selection for e-noses”
431. Invited Paper: **Gardner JW**, *IEE Seminar on MEMS Sensor Technologies*, London, UK 25 April 2005, “Smart tongue”
432. Koickal TJ, Tan SL, Hamilton A, Covington JA, **Gardner JW** and Pearce TC, *IEEE Instrumentation Measurement Conference*, Ottawa, Canada, 17-19 May 2005 “A smart interface circuit to ameliorate the loss of measurement range in chemical microsensor arrays”
433. Iwaki T, Covington JA, Udrea F, Ali SZ, Guha PK and **Gardner JW**, *Journal of Physics: Conference Series* **15** (2005) 27-32, “Design and simulation of resistive SOI CMOS micro-heaters for high temperature gas sensors”
434. Leonte I, Sehra G, Cole M, Hesketh P and **Gardner JW**, *Proc. of Eurosensors XIX*, Barcelona, Spain, 11-14 Sept. 2005 “High frequency SH-SAW devices for liquid sensing”
435. Pardo M, Sberveglieri G and **Gardner JW**, *Proc. 4th IEEE Conf. on Sensors*, Irvine, California, USA, Oct. 31 – 3 Nov. 2005, “Feature selection for high dimensionality data in chemical sensing”
436. Cole M, **Gardner JW**, Leonte I, Sehra G, Noh HS and Hesketh PJ, *Proc. 4th IEEE Conf. on Sensors*, Irvine, California, USA, Oct. 31 – 3 Nov. 2005, “Voltage modulated SAW microtrap system: smart assaying of biomaterials”
437. Tan SL, Covington JA, and **Gardner JW**, *SPIE Meeting on Smart Sensors and Materials*, San Diego, March 2004. “Ultra-fast chemical sensing microsystem employing resistive nanomaterials”
438. **Gardner JW**, Garcia-Guzman J, and Cole M SPIE Meeting on Smart Sensors and Materials, San Diego, March 2004. “Smart ASIC chip for vapour detection based upon carbon black/polymer composite materials”
439. Invited Tutorial: **Gardner JW**, *3rd NOSE Short Course on Fundamentals of Signal and Data Processing*, 21-26 March 2004. “Feature selection techniques”
440. Sun MC, Chetwynd DG, and **Gardner JW**, *Proc. of Euspen 2004*, Glasgow, Scotland, May-June 2004 “A simple microtensometer for polymeric microparts”
441. Covington JA, LLaudet E, Dale N and **Gardner JW**, *8th World Congress on Biosensors: Biosensors 2004*, Granada, Spain 24-26 May 2004. “A bio-probe with integrated electrode array for in-situ chemical measurement”.
442. Pearce TC, Koickal TJ, Fulvi-Mari C, Covington JA, Tan S, **Gardner JW** and Hamilton A, *Brain Inspired Cognitive Systems*, Aug 29-Sept 1 2004, Stirling, Scotland. “Silicon-based neuromorphic olfactory pathway implementation”
443. Leonte I, Hunt M, Sehra G, Cole M and **Gardner JW**, *Proceedings of IEEE Postgraduate Student Colloquium*, Manchester, September 2004, p. 47-52 “SAW bioliquids sensor with RF interrogation”
444. Invited Paper: **Gardner JW**, Workshop on “From chemical communication to olfaction”, Delwart Foundation, Louvain, Belgium, Oct 22-24 2004, “State-of-the-art electronic nose technology and silicon implementation”
445. Invited Paper: **Gardner JW**, Seminario Sensores Inteligentes para a deteccao e separacao de rolhas com aromas estranhos, Portugal, Sept 23 2004 “Application of smart sensors in the cork industry”
446. Yates JWT, Chappell MJ and **Gardner JW**, *Proceedings of IEEE Sensors Conference*, Vienna, Austria, 24-27 Oct 2004, p. 1253-1256 “Phenomena based dynamic model of carbon black polymer composite materials”
447. Leonte I, Hunt MS, Sehra G, Cole M, **Gardner JW**, Noh HS, Hesketh PJ, *Proceedings of IEEE Sensors Conference*, Vienna, Austria, 24-27 October 2004, p. 919-922 “Towards a wireless microsystem for liquid analysis”
448. Tan SL, Covington JA, **Gardner JW** and Hesketh PJ, *Proceedings of IEEE Sensors Conference*, Vienna, Austria, 24-27 Oct 2004, p. 1171-1174 “Ultra fast/ low volume odour delivery package for chemical microsystems”

449. Dutta R, **Gardner JW** and Hines EL, *Proceedings of IEEE Sensors Conference*, Vienna, Austria, Sept. 2004, p. 324-326 “ENT bacteria classification using a neural network based Cyrano 320 electronic nose”
450. Ali SZ, Gonzalez W, **Gardner JW** and Udrea F, *Proceedings of IEEE Semiconductor Conference 2004*, Sinaia, Romania, 4-6 October 2004, vol. 2, p. 351-354 “Analysis of high temperature SOI microhotplates”
451. **Gardner JW**, Boilot P, and Hines EL, *Proc. ISOEN, Latvia, 25-27 June 2003*. “Enhancing e-nose performance by data fusion and sensor selection”
452. Yates JW, **Gardner JW**, Chappell MJ, Bolt F, Beeby L and Dowson C, *IFAC*, 2003. “Chemical sensor screening of blood samples: robust analysis via data set reduction”
453. **Gardner JW**, Covington JA, Shaw G, Parkin I, and Udrea F, *Proc. Eurosensors XVII, Portugal, 21-24 September 2003*. “SOI gas sensors with low temperature CVD films”
454. Sehra G, Cole M and **Gardner JW**, *Proc. Eurosensors XVII, Portugal, 21-24 September 2003*. “Miniature taste sensing system based on dual SAW sensor device”
455. Tamadoni R, Bartlett PN, Chetwynd DG, and Gardner JW, *Proc. Eurosensors XVII, Portugal, 21-24 September 2003*. “Investigation of a conducting polymer O-ring seal for microvalves”
456. Invited Paper: **Gardner JW**, *Nato Advanced Research Workshop on Electronic Noses and Explosive Detection, Coventry, 1-2 October 2003*. “Review of electronic nose technology”
457. Covington JA, Tan SL, Hamilton A, Koickal T, Pearce TC, and Gardner JW, *Proc. IEEE Sensors 2003 Conference*, Canada, 22-24 October 2003. “Combined smart chemoresistive/FET sensor array”
458. Invited Tutorial: **Gardner JW**, *IEEE Sensors 2003 Conference, Canada, 22-24 October 2003*. “Electronic Noses: towards a nose-on-a-chip”
459. Invited Talk: **Gardner JW**, Georgia Institute of Technology, Atlanta, USA, September 2003. “Biosensors, Electronic Noses and Electronic Tongues”
460. Fang Q, Chetwynd DG, **Gardner JW**, Toh C, Bartlett PN *E_MRS-2002, Spring Meeting, Symposium Q: Current Trends in Nanotechnologies, 2002*, “Investigation of conducting polymers as microvalve seals”
461. Invited Paper: **Gardner JW** *Ist NOSE II Short Course, 24 Feb - 1 Mar, 2002*, “Applications of electronic noses”
462. Invited Paper: **Gardner JW** *Ist NOSE II Short Course, 24 Feb - 1 Mar, 2002*, “Market aspects”
463. Government report: *A Strategic Framework for 2015, Foresight Publication, DTI, March 2002*. DTI Pub 6030/3k/03/02/NP. URN 02/808
464. **Gardner JW** *Public Consultation Document, DTI Conference Centre, 14 March 2002*, “Sensors for trends for monitoring the environment, industrial health and safety”
465. Bartlett PN, Guerin S, Marwan J, **Gardner JW**, Lee SM, Willett MJ, LeClerc SA *Proc. Symp. Microfabricated Systems & MEMS, Electrochemical Society, Philadelphia, May 2002*, “A micromachined planar pellistor using an electrochemically deposited nanostructured catalyst”
466. Bartlett PN, Guerin S, Marwan J, **Gardner JW**, Lee SM, Willett MJ, LeClerc SA *Proc. Symp. Microfabricated Systems & MEMS, Electrochemical Society, Philadelphia, May 2002*, “Sensors for trends for monitoring the environment, industrial health and safety”
467. Cole M, Sehra GS, **Gardner JW**, Varadan VJ *Proc. IEEE Sensors 2002, Florida, 12-14 June 2002*, “Fabrication and testing of smart tongue devices for liquid sensing”.
468. Covington JA, Udrea F, **Gardner JW** *Proc. IEEE Sensors 2002, Florida, 12-14 June 2002*, “Resistive gas sensor with integrated MOSFET micro hot-plate based on an analogue SOI CMOS process”.
469. Invited Paper: **Gardner JW**, Cole M, Udrea F *Proc. IEEE Sensors 2002, Florida, 12-14 June 2002*, “CMOS gas sensors and smart devices”.
470. Udrea F, Liu CC, Covington JA and **Gardner JW** *Proc. 9th Int. Meeting on Chemical Sensors, Boston, 7-10 July 2002*, “Development of smart gas sensors using SOI technology and embedded micro-FET heaters”.

471. Leclerc SA, Willett MJ, Lee SM, **Gardner JW**, Marwn J and Bartlett PN *Proc. 9th Int. Meeting on Chemical Sensors, Boston, 7-10 July 2002*, “Optimisation of mesoporous catalysts for combustible gas sensor applications”.
472. Leclerc SA, Willett MJ, Lee SM, **Gardner JW**, Marwn J and Bartlett PN *Proc. 9th Int. Meeting on Chemical Sensors, Boston, 7-10 July 2002*, “Novel combustible gas sensors employing micromachined silicon substrates and nanostructured catalysts”.
473. Cole M, **Gardner JW** and Bartlett PN *Proc. 9th Int. Meeting on Chemical Sensors, Boston, 7-10 July 2002*, “Integrated CMOS resistive ratiometric smart devices for odour and vapour sensing”.
474. Keynote Paper: **Gardner JW** *Proc. 9th Int. Meeting on Chemical Sensors, Boston, 7-10 July 2002*, “Electronic noses: from macro to nano scaled devices”.
475. Cole M, Guzman G and **Gardner JW** *Proc. Eurosenors XVI, Prague, September 2002*, “Smart ratiometric ASIC chip for a palm-top VOC monitor”.
476. Lu CC, Covington JA, Udea F, **Gardner JW** *Proc. Eurosenors XVI, Prague, 15-18 September 2002*, “Electro-thermal characterisation of high-temperature smart gas sensors in SOI technology”.
477. Sehra G S, Covington JA, Cole M, and **Gardner JW** *Proc. 9th International Symposium on Olfaction and Electronic Nose, Rome, 29 September – 2 October 2002, eds A d’Amico and C di Natale*, “Combined electronic nose/tongue for liquid analysis”.
478. Invited Paper: **Gardner JW** *Proc. NOSE II Workshop, Rome, 3-4 October 2002*, “An overview of the electronic nose market”.
479. Invited Talk: **Gardner JW** *Cambridge Physical Society Seminar Series, Cavendish Laboratory, Cambridge, UK, November 2002*, “Electronic noses: from macroscale to nanoscale devices”
480. **Gardner JW** *Advances in Sensor Technologies Symposium, Warwick University, February 2001* “Advances in Microsensors and MEMS”
481. Invited Talk: **Gardner JW**, *Electrochemical Seminar, Southampton University, March 2001*, “Micromachined structures for chemical applications”
482. Lu C-C, Udea F, **Gardner JW**, Setiadi D, Dogaru T, Tsai TH and Covington JA, *Proc. of SPIE, 4408*, pp.86-95, (2001). “Design and coupled-effect simulations of CMOS micro gas sensors built on SOI thin membranes”.
483. Cole M, **Gardner JW** and Bartlett PN *Proc. ISOEN 8, Washington DC, USA, 25-28 March 2001* “Low-drift odour ratiometric resistive elements for analogue CMOS smart sensors”
484. Fang Q, Chetwynd DG and **Gardner JW** *2nd Euspen Conference, May, 2001* “Tensile properties of conducting polymer fibres”
485. Llobet E, Brezmes J, Ionescu R, Vilanova X, Al-Khalifa S, **Gardner JW**, Barsan N and Corrieg X *Technical Digest of Transducers 01, Munich, 10-14 June 2001* “Wavelet transform and fuzzy ARTMAP based pattern recognition for fast gas identification using a micro-hotplate gas sensor”
486. **Gardner JW**, Lee SM, Bartlett PN, Guerin S, Briand D, de Rooij NF *Technical Digest of Transducers 01, Munich, 10-14 June 2001* “Silicon planar microcalorimeter employing nanostructured films”
487. **Gardner JW**, Covington JA, Udea F, Dogaru T, Lu C-C and Milne W *Technical Digest of Transducers 01, Munich, 10-14 June 2001* “SOI-based micro-hotplate microcalorimeter gas sensor with integrated BiCMOS transducer”
488. Keynote Paper: **Gardner JW** and Cole MV *5th Int. Conf. on Breath Odor, Tokyo, 1-2 July 2001* “Medical applications of electronic nose technology”
489. Invited Paper: Varadan VK and **Gardner JW** *8th Annual International Symposium on Smart Structures and Materials: Smart Electronics and MEMS, 4-8 March, Newport Beach, California, USA, SPIE code no.4334-48, (2001)*. “Smart tongue for monitoring the freshness of orange juice and milk”.
490. Al-Khalifa S, **Gardner JW** and Maldonado-Bascon S *Proc. Sensors and Their Applications, City University, UK, 3-6 September 2001* “Rapid multicomponent analysis using a thermally-modulated resistive gas microsensor and a discrete wavelet transform”

491. Lu C-C, Sediadi D, Udrea F, Milne WI, Covington JA and Gardner *Int. Conference on Modelling & Simulation of Microsystems, MSM 2000, San Diego, USA, March, 2000, pp.297-310* “3D thermo-electro-mechanical simulations of gas sensors based on SOI membranes”
492. Searle GE, **Gardner JW**, Chappell M, Godfrey KR and Chapman MJ *12th IFAC Symposium on System Identification, SYSID 2000, Santa Barbara, USA, 21-23 June 2000* “System identification of electronic nose data for monitoring cyanobacteria in potable water: black-box modelling”
493. Covington JA, **Gardner JW** and Briand D *8th Int. Conf. on Chemical Sensors, Basel, Switzerland, 3-5 July, 2000* “A polymer gate FET sensor array for detecting organic vapours”
494. Covington JA, **Gardner JW**, Toh C, Bartlett PN, Briand D and de Rooij NF *7th Int. Symposium on Olfaction and Electronic Noses, Brighton, UK, 20-24 July 2000* “Array of MOSFET devices with electrodeposited conducting polymer gates for vapour and odour sensing”
495. Tamadoni R, **Gardner JW**, Dyer DC, Krauss A, Weimar U, Besnard I, Bartlett PN, Gier L, Stefano C, Briand D, van der Schoot B, Sundgren H and Davide F, *8th Int. Conf. on Chemical Sensors, Basel, Switzerland, 3-5 July 2000* “A cabin air analyser for automotive application”
496. Llobet E, Rubio J, Vilanova X, Brezmes J, Correig X, **Gardner JW** and Hines EL, *8th Int. Conf. on Chemical Sensors, Basel, Switzerland, 3-5 July 2000* “Electronic nose simulation tool centred on PSPICE”
497. de Matos R, Dow CS and **Gardner JW** *7th Int. Symposium on Olfaction and Electronic Noses, Brighton, UK, 20-24 July 2000* “Investigation of the growth characteristics of E. coli using headspace”
498. Boilot P, Hines EL, **Gardner JW**, Hero M, Fink C, Mitchell J and Spencer J *7th Int. Symposium on Olfaction and Electronic Noses, Brighton, UK, 20-24 July 2000* “Detection of bacteria causing eye infection using an electronic nose”
499. Cole M, **Gardner JW**, Covington JA, Fife D, Kwok CY, Brignell JE and Bartlett PN *14th European Conference on Solid-state Transducers, Copenhagen, Denmark, August 27-30, 2000* “Active bridge polymeric resistive device for vapour sensing”
500. Udrea F, Setiadi D, **Gardner JW**, Covington JA, Dogaru T and LU CC *14th European Conference on Solid-state Transducers, Copenhagen, Denmark, August 27-30, 2000* “A novel class of smart gas sensors using CMOS micro-heaters embedded in an SOI membrane”
501. Cole M, **Gardner JW**, Brignell JE and Bartlett PN *6th Joint Warwick-Tokyo Nanotechnology Symposium, Coventry, UK, 18-21 September 2000* “Characterisation of a poly(pyrrole) and poly(bithiophene) five element CMOS-compatible active bridge devices”
502. Lee SM, **Gardner JW**, Dyer DC, Bartlett PN and Tan YM *6th Joint Warwick-Tokyo Nanotechnology Symposium, Coventry, UK, 18-21 September 2000* “Silicon planar pellistor employing nanostructured films and a micro-hotplate”
503. Invited Paper: Varadan VK and **Gardner JW** *Proc. SPIE on Smart Electronics and MEMS, Newport Beach, USA, March 1999* “Smart tongues and smart noses”
504. **Gardner JW**, Covington JC and Hatfield JV *Proc. SPIE on Smart Electronics and MEMS, Newport Beach, USA, March 1999* “Conducting polymer FET devices for vapour sensing”
505. **Gardner JW**, Udrea F and Milne W *Proc. SPIE on Smart Electronics and MEMS, Newport Beach, USA, March 1999* “Numerical simulation of a new generation of high-temperature micropower gas and odour sensors based on SOI technology”
506. Setiadi D, Udrea F, Milne WI, Covington J and **Gardner JW** *SPIE Meeting, USA, 1999* “3D numerical simulation of novel SOI MOSFET based gas sensors”
507. Plenary Paper: **Gardner JW** *Proc. Sensors & their Applications X, Cardiff, 5-8 Sept. 1999* “Towards a nose-on-a-chip: micromachining of a miniature olfactory system”
508. **Gardner JW**, Dow CS, Shin HW, Searle G and Chappell M *International Symposium on Olfaction & Electronic Noses, Tuebingen, Germany, 20-2 September 1999* “Dynamical signal processing techniques for bioprocess monitoring”

509. Shin HW, **Gardner JW**, Hines EL and Dow CS, *International Symposium on Olfaction & Electronic Noses, Tubingen, Germany, 20-2 September 1999* “Classification of toxicity and growth of cyanobacteria in water with an electronic nose”
510. Singh S, Hines E L and **Gardner JW** *Proc. 3rd Int. Conf. on Artificial Neural Networks and Genetic Algorithms, 1998 Wein, Springer 537-540* “Classifier Systems based on possibility distributions: a comparative study”
511. **Gardner JW** *9th CIMTEC, Florence, Italy, June 1998* “Pattern recognition in gas sensing”
512. Ingleby P, **Gardner JW**, and Bartlett P N *Proc. Eurosenors XII, Vol. 1, ed. N White, IOP Publishing Ltd, Bristol pp. 135-139 1998* “Characterisation of a CMOS current drive chip for an array of six polymeric resistive gas sensors”
513. Cole M, **Gardner JW**, Lim A W Y, Scivier P K and Brignell J E *Proc. Eurosenors XII, Vol. 2, ed. N White, IOP Publishing Ltd, Bristol pp. 1099-1102 1998* “Characterisation of a CMOS current drive chip for an array of six polymeric resistive gas sensors”
514. Hatfield J, Covington JA and **Gardner JW** *Proc. of Int. Conf. on Chemical Sensors, Beijing, June, 1998* “GasFETs incorporating conducting polymers as gate materials”
515. **Gardner JW** *Proc. 5th Int. Symp. on Electronic Noses, Baltimore, USA., 27-30 Sept., 1998* “An electronic nose to diagnose illness”
516. Invited Talk: **Gardner JW** *South East Midlands branch of Institution of Agricultural Engineers, Silsoe, 3 March 1997* “Electronic noses: fabrication and application”
517. Hines E L, **Gardner JW**, Molinier F, Craven M A and Bartlett P N *Sensor Technology Opportunities in the Upstream Oil and Gas Industries, DTI Conference, London 6 May 1997* “Sensor data processing via intelligent systems”
518. Shin H W, Lloyd C and **Gardner JW** *Proceedings of Transducers '97, Chicago, 16-19 June 1997, pp. 935-938* “Combined resistive and calorimetric sensing of gases using a single micromachined device”
519. **Gardner JW**, Lloyd C R, Pike A C, Brignell J E, Scivier P, Bartlett P N, Duke A J and Elliott J M *Proc. Eurosenors XI, Warsaw, Poland, 21-24 September 1997* “Conducting polymer based resistance micro-bridge for sensing of gases and vapours”
520. Scivier P K, White N M, Brignell J E, **Gardner JW** and Vidic M M *Proc. Eurosenors XI, Warsaw, Poland, 21-24 September 1997* “Pulsed current analog CMOS ASIC excitation of polymer-based gas sensors”
521. **Gardner JW** and Gardner W E *Proc. of British Institute of Non-destructive Testing conference, UK, 16-18 September 1997* “The role of electronic noses in condition monitoring”
522. Invited Paper: **Gardner JW** *Proc. of 3rd East Asian Conf. on Chemical Sensors, Seoul, Korea, 5-6 November 1997* “Diagnosing illness with an electronic nose”
523. Shin H W and **Gardner JW** *Proc. of 3rd East Asian Conf. on Chemical Sensors, Seoul, Korea, 5-6 November 1997* “A combined resistive and calorimetric gas sensor”
524. Invited Paper: **Gardner JW** and Bartlett PN, *Pittsburgh Conf. on Analytical Chemistry and Applied Spectroscopy, 4-7 March 1996, Chicago, USA* “The history of electronic noses”
525. Invited Paper: **Gardner JW** and Bartlett PN, *Pittsburgh Conf. on Analytical Chemistry and Applied Spectroscopy, 4-7 March 1996, Chicago, USA* “The future of electronic noses”
526. Invited Paper: **Gardner JW**, *The Institute of Physics Annual Congress, 23-25 April 1996, Telford, UK* “Chemical and biological silicon sensors”
527. Bartlett P N, Elliott J and **Gardner JW**, *Euroanalysis IX, 1-7 Sept. 1996, Bologna, Italy* “Applications of, and developments in, machine olfaction”
528. Ingleby P, Covington J, **Gardner JW** and Bartlett P N *10th European Conference on Solid-state Transducers (Eurosenors X), Leuven, Belgium, 9-11 September 1996* “Dual resistance-mass polymeric sensor for improved gas sensing”
529. Dyer DC and **Gardner JW** *10th European Conference on Solid-state Transducers (Eurosenors X), Leuven, Belgium, 9-11 September 1996* “High precision interface for a hybrid electronic nose”

530. Chetwynd DG and **Gardner JW** *IEE Colloquium on Conducting Polymers and their applications in transducers and instrumentation, Digest No. 96/242, 30 October 1996* “Tribological applications of conducting polymer films in micromechanical devices”
531. Dyer DC and **Gardner JW** *IEE Colloquium on Conducting Polymers and their applications in transducers and instrumentation, Digest No. 96/242, 30 October 1996* “Interface electronics for resistive and piezoelectric polymer gas sensors”
532. Invited Paper: **Gardner JW** *3rd International Symposium on Olfaction & Electronic Noses, Miami, Florida, 3-6 November 1996* “Electronic nose technology: present & future”
533. **Gardner JW**, Craven MA and Hines EL *3rd International Symposium on Olfaction & Electronic Noses, Miami, Florida, 3-6 November 1996* “Classification of bacteria age and type using an array of metal oxide sensors and pattern recognition techniques”
534. Invited Paper: Hines EL, **Gardner JW**, Molinier F, Craven MA and Bartlett PN *Royal College of Anaesthetists, Symposium, London, 7-8 November 1996* “Can we mimic human sensory systems?”
535. Invited Paper: **Gardner JW** *10th Colloquium of Gas Analysis & Sensing Group, 16-17 December 1996, Swansea* “New electronic noses”
536. **Gardner JW** *1995 IEMRS 1995 Spring Meeting, Strassbourg (France) May 22-26, 1995 Symposium A, Microstructuring and Microsensors.* “Application of conducting polymer technology in Microsensors”
537. Welham CJ, **Gardner JW** and Greenwood J *Technical Digest of Transducers '95-Eurosensors IX, Stockholm, Sweden, 25-29 June 1995* “A laterally driven micromachined resonant pressure sensor”
538. **Gardner JW** and Bartlett PN *Technical Digest of Transducers '95-Eurosensors IX, Stockholm, Sweden, 25-29 June 1995* “Performance definition and standardisation of electronic noses”
539. **Gardner JW** and Pike P *Sensors and their Applications VII, Dublin, 10-13 September 1995*, p58-59 “Nanoengineered dual sensor device for intelligent monitoring of gases”
540. Elliott-Martin RJ, Bartlett PN, **Gardner JW** and Mottram TT *Sensors and their Applications VII, Dublin, 10-13 September 1995* p12-20 ed. Augousti, IOP Sensor Series, Bristol, “An overview of electronic noses and their applications”
541. **Gardner JW** and Bartlett PN *2nd International Symposium on Olfaction & Electronic Noses, Toulouse, France, 2-3 October 1995* “Microinstrumentation for odour sensing”
542. Bartlett PN and **Gardner JW** *2nd International Symposium on Olfaction & Electronic Noses, Toulouse, France, 2-3 October 1995* “Towards the definition of standards and performance criteria for electronic noses”
543. Pearce TC, **Gardner JW**, and Goepel W *2nd International Symposium on Olfaction & Electronic Noses, Toulouse, France, 2-3 October 1995* “Olfaction and electronic noses in flavour analysis”
544. Bartlett PN, Beriet C, Chetwynd DG, **Gardner JW**, and Liu X *Proc. Leeds, UK, September 1995* “Tribological properties of conducting polymer films for application in nanotechnology”
545. Liu X, Chetwynd DG, **Gardner JW**, Smith ST, Beriet C and Bartlett PN *Proc. 10th Annual Meeting of ASPE, Texas, USA, October 1995* “Measurement of friction at light loads in polypyrrole thin film bearings”
546. Invited Paper: **Gardner JW**, Bartlett P N and Goepel W *1994 24th Int. Conf. on Environmental Systems, Friedrichshafen, Germany, 20-23 June 1994* SAE Technical Paper Series 941266 “An electronic nose for measuring airborne organic compounds”
547. Craven M A, Hines E L, **Gardner JW**, Morgan D, Horgan P, Ene I A *1994 Int. Conf. on Neural Networks & Expert Systems in Medicine and Healthcare, Plymouth, England, 23-26 August 1994* “Bacteria detection and classification using artificial neural networks in conjunction with an electronic nose”
548. **Gardner JW** *1994 Warwick-Tokyo Conference, Warwick, England, 19-23 September 1994* “Nanoparticle films for reliable semiconducting oxide gas sensor array devices”
549. Holmberg M, Winquist F, Lundstrom I, Hines E L and **Gardner JW** *1994 Eurosensors VIII, Toulouse, France, 25-28 September 1994* “Identification of paper quality with an electronic nose”

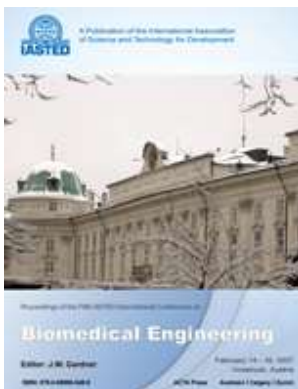
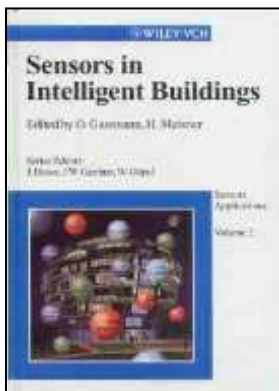
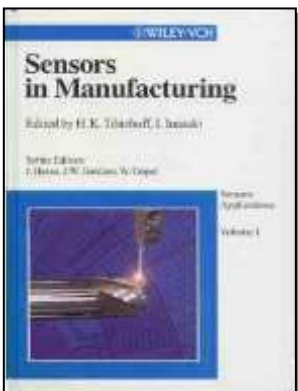
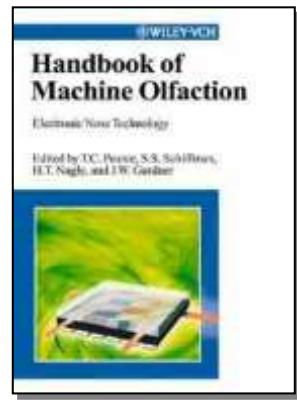
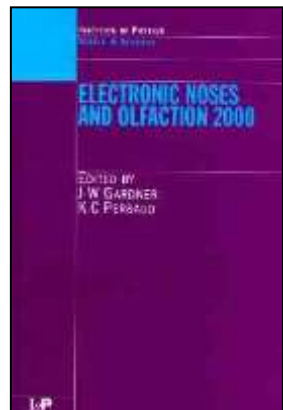
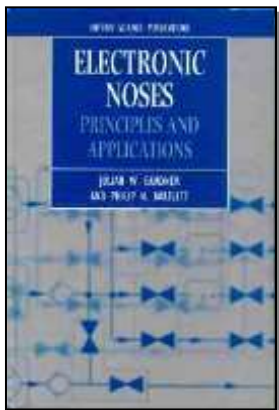
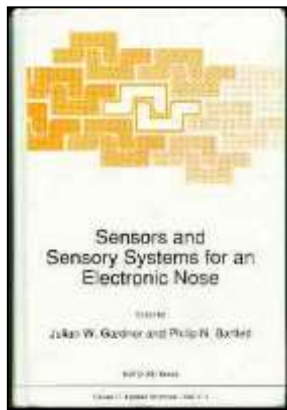
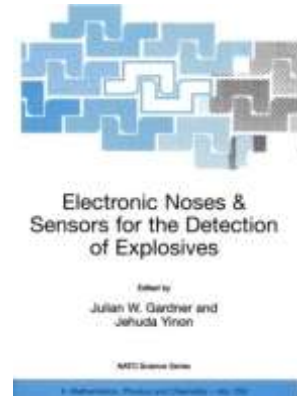
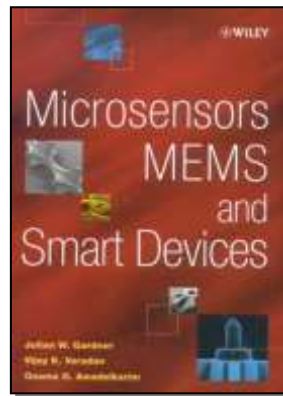
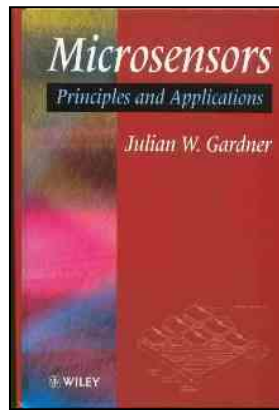
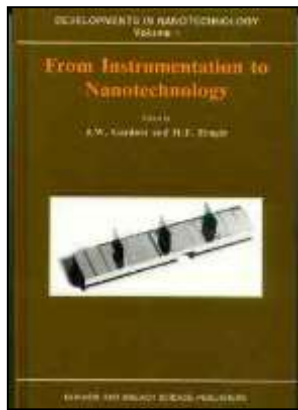
550. Craven MA, Hines, **Gardner JW**, Horgan P, Morgan D, and Ene IA 1994 *Proceedings of 2nd Int. Congress on Intelligent Techniques and Soft Computing, Aachen, Germany September 20-23 1994* 768-774 pp. “Application of an artificial neural network based electronic nose to the classification of bacteria”
551. **Gardner JW** 1994 *Euroensors VIII, Toulouse, France, 25-28 September 1994* “Intelligent gas sensing using an integrated sensor pair”
552. **Gardner JW**, Pike A, de Rooij N F, Koudelka-Hep M, Clerc P A, Hierlemann A and Göpel W 1994 *Euroensors VIII, Toulouse, France, 25-28 September 1994* “Integrated polymer array sensor for detecting organic solvents”
553. Invited Paper: **Gardner JW** 1994 *Proceedings of 1st Int. Symposium on Olfaction & Electronic Noses, Toulouse, France, 26-27 September 1994* “Electronic nose technology today”
554. Elliot-Martin R, Bartlett P N and **Gardner JW** 1994 *Proceedings of 1st Int. Symposium on Olfaction & Electronic Noses, Toulouse, France, 26-27 September 1994* “Monitoring of breath odour in dairy cattle”
555. Udrea F, **Gardner JW**, Tan T and Pearce T 1994 *17th Edition of Annual Semiconductor Conference, Sinaia, Romania, 11-16 October 1994* “Design of a silicon sensor array for gas analysis”
556. Fekadu A A, Hines E L and **Gardner JW** 1993 *Int. Conf. on Neural Nets & Genetic Algorithms, Innsbruck, Austria, April 1993* “Neural tree network based electronic nose”
557. Fekadu A A, Hines E L and **Gardner JW** 1993 *Int. Conf. on Neural Nets & Genetic Algorithms, Innsbruck, Austria, April 1993* “Genetic algorithm design of neural net based electronic nose”
558. Mason J D, Hines E L and **Gardner JW** 1993 *Int. Conf. on Neural Nets & Genetic Algorithms, Innsbruck, Austria, April 1993* “Analysis of electronic nose data using neural networks”
559. Mason J D, Hines E L and **Gardner JW** 1993 *Workshop on Computing with Logical Neurones, York University, 6-7 April 1993* “Analysis of electronic nose data using weightless neural networks and genetic algorithms”
560. **Gardner JW** 1993 *Sensors for Laboratory and On-line Analysis, Manchester, UK, 28-29 April 1993* “Tin oxide and polymer semiconductor sensor systems for laboratory or on-line gas and odour detection”
561. Bartlett P N and **Gardner JW** 1993 *15e Colloque Scientifique International sur la Cafe, Montpellier, France, 6-11 June 1993* “Electronic Noses - principles, applications and outlook”
562. **Gardner JW** 1993 *Focus on Micromechanics, IOP Meeting, University of Warwick, UK, 8-9 June 1993* “Micromachining of integrated gas microsensor systems”
563. **Gardner JW** 1993 *Proceedings of 11th National Symposium on Olfaction and Taste, Sapporo, Japan, July 12-16 1993* “Intelligent ChemSADs for artificial odour-sensing of beers and lagers”
564. Herwaarden A W, Sarro P M, **Gardner JW** and Bataillard P 1993 *Technical Digest of Transducers '93, Yokohama, Japan, June 1993* “Microcalorimeters for (bio)chemical measurements in gases and liquids”
565. Tan T T, **Gardner JW**, Farrington J F and Bartlett P N 1993 *EPMS '93, Sheffield, August 1993* “Current-voltage characteristics of evaporated and electroplated metal polypyrrole junctions”
566. **Gardner JW** and Hines E L 1993 *USITT Colloquium on Sensor Update: New Developments in Signal Processing, Southampton, 9 September 1993* “Signal processing for an electronic nose”
567. Larkin A B, Hines E L, Thomas S M and **Gardner JW** 1993 *Workshop on Neural Network Applications, Liverpool, 13-14 September 1993* “Supervised learning using the vector memory array method: a novel neural network”
568. Invited Paper: **Gardner JW** and Bartlett P N 1993 *Euroensors VII, Budapest, Hungary, 27-29 September 1993* “A brief history of electronic noses”
569. **Gardner JW**, Pearce T C, Friel S, Bartlett P N and Blair N 1993 *Euroensors VII, Budapest, Hungary, 27-29 September 1993* “A multisensor system for beer flavour monitoring using an array of conducting polymers and predictive classifiers”

570. Hines E L and **Gardner JW** 1993 *Euroensors VII, Budapest, Hungary, 27-29 September 1993* “An artificial neural emulator for an odour sensor array”
571. **Gardner JW**, Chetwynd D G, Smith S T, Harb S M, Yao Z Q, Bartlett P N and Eastwick-Field V 1993 *Euroensors VII, Budapest, Hungary, 27-29 September 1993* “Electropolymerised films for low friction microactuator bearings”
572. **Gardner JW** and Bartlett P N 1993 *Sensors '93, Nuremberg, Germany, 11-13 October 1993* “Intelligent sensor systems for electronic monitoring of beer flavours”
573. Pearce T C and **Gardner JW** 1993 *IEEE Int. Conf. on Systems, Man and Cybernetics, Vol. 5, 165-170, France, 17-20 October 1993* “Machine olfaction: Intelligent sensing of odours”
574. Hines E L, **Gardner JW** and Stansfield R N 1992 *Proceedings of IEE Colloquium on DSP in Instrumentation 1992/009 10/1-4* "A stand alone neural network based electronic nose"
575. **Gardner JW** 1992 *Workshop on Electronic Noses, Tubingen, Germany, 28-30 April* "Current R & D activities on Electronic Noses: A status report"
576. Hines E L, **Gardner JW**, Fung W W and Fekadu A A 1992 *Second Irish Neural Network Conference, Queen's University Belfast, N. Ireland, 25-26 June 1992* “Improved rate of convergence in a MLP based electronic nose”
577. **Gardner JW** and Bartlett P N 1992 *International Conference on Synthetic Metals, Gothenburg, Sweden, 12-18 August 1992* “Design of conducting polymer gas sensors: modelling and experiment”
578. Hines E L, Potter C E R and **Gardner JW** 1992 *2nd Romanian International Congress of Clinical Engineering & Medical Computing, Bucharest, Romania, 23-25 August 1992* “Kohonen network based electronic nose”
579. Hines E L, Gianna C and **Gardner JW** 1992 *Workshop on Neural Networks: Techniques and Applications, University of Liverpool, UK, 7-8 September 1992* “Neural network based electronic nose using constructive algorithms”
580. **Gardner JW**, Friel S, Pearce T, Dodd G H, Bartlett P N and Blair N 1992 *RSC Symposium on Sensors & Signals, Trinity College, Dublin, Ireland, 16-18 September 1992* “The Warwick-Bath electronic nose: Application to beer flavour monitoring”
581. Friel S and **Gardner JW** 1992 *3rd International Symposium on Nanotechnology, Tokyo, Japan, 17-19 September 1992* “Characterisation of gas-sensitive conducting polymer thin films grown on microelectrode arrays”
582. Hines EL, Moore S, Goepel W and **Gardner JW** 1992 *Euroensors VI, San Sebastian, Spain, 5-7 October 1992* “A modified multilayer perceptron model for gas mixture analysis”
583. Corcoran P, Shurmer HV and **Gardner JW** 1992 *Euroensors VI, San Sebastian, Spain, 5-7 October 1992* “Integrated tin oxide sensors of low power consumption for use in an electronic nose”
584. Bowen DK, Davies ST and **Gardner JW** 1992 *PEDAC '92, University of Warwick, UK, December 1992* “Fabrication processes for nanotechnology”
585. **Gardner JW**, Bartlett PN, Dodd GH and Shurmer HV 1991 *Institute of Non-destructive Testing, Northampton, February 20* "An electronic nose in process control"
586. Invited Paper: Bartlett PN, Dodd GH, Shurmer HV and **Gardner JW** 1991 *The Pittsburgh Conference, Chicago, March 4-8* "The design of an artificial olfactory system"
587. **Gardner JW**, Shurmer HV and Tan TT 1991 *Microengineering Report* "Application of electronic nose to coffee discrimination"
588. Shurmer HV and **Gardner JW** 1991 *East-West Workshop on Microelectronic sensors, Sozopol, Bulgaria, May 7-9* "Odour discrimination with an electronic nose"
589. Bartlett PN and **Gardner JW** 1991 *NATO Workshop on Sensors & Sensory Systems for an Electronic Nose, Reykjavik, 5-9 August* "Conducting polymers as odour sensors"
590. **Gardner JW** and Bartlett PN 1991 *NATO Workshop on Sensors & Sensory Systems for an Electronic Nose, Reykjavik, 5-9 August* "Pattern recognition techniques for an electronic nose"

591. Olafsson R, Martinsdottir E, Olafsdottir G, Sigfusson T and **Gardner JW** 1991 NATO Workshop on Sensors & Sensory Systems for an Electronic Nose, Reykjavik, 5-9 August "Monitoring of fish freshness"
592. **Gardner JW** 1991 *European workshop on Pyrolysis Mass Spectrometry, Biosensors and Data Analysis Portugal, 16-20 September* "Data processing and pattern recognition techniques in odour sensing"
593. Corcoran P, Shurmer HV and **Gardner JW** 1991 *Sensors & Their applications V, Edinburgh, 22-25 September* "Technological aspects of the design and performance of metal oxide odour sensors"
594. **Gardner JW**, Shurmer HV and Tan TT 1991 *Eurosenors V Conference, Rome, 30 Sept. - 2 Oct* "Application of an electronic nose to the discrimination of coffees"
595. Invited Paper: **Gardner JW** 1991 *Sensors & Systems '91, NEC, Birmingham, 30-31 October 1991* "On-line monitoring of odours using chemical sensor arrays"
596. **Gardner JW** 1990 *Meeting on Trends in Gas Monitoring, SIRA Ltd, May* "The Warwick Electronic Nose"
597. Bartlett PN and **Gardner JW** 1990 *Physics World*, July "Nasal Nets catch the scent"
598. **Gardner JW** 1990 *Electronic Engineering*, **62** "Electronic nose developments at Warwick" p15
599. Springett MB, Shurmer HV, **Gardner JW**, Tan TT and Moore TT 1990 *CFDRA report*, "Applications of an electronic nose in the food and drink industry"
600. **Gardner JW** 1990 *2nd Biennial Tokyo-Warwick Seminar*, University of Warwick, September "Potential applications of electropolymerised thin organic films in nanotechnology"
601. **Gardner JW** 1990 *Proceedings of SERC Advanced Vacation School*, University of Warwick, September 16-21 "Recent advances in solid-state microsensors"
602. Shurmer H V, Corcoran P, **Gardner JW** 1990 *Eurosenors IV Conference*, Karlsruhe, October 1-3 "Integrated arrays of gas sensors using conducting polymers with molecular sieves"
603. **Gardner JW** 1989 *8th Interdisciplinary Surf. Sci. Conf.*, University of Liverpool "Properties of metal/poly-N-methylpyrrole schottky barriers"
604. **Gardner JW** 1989 *Molecular Electronics Workshop*, University of Bangor, April "I-V characteristics of gold/poly-N-methylpyrrole junctions"
605. **Gardner JW** 1989 *8th Meeting of Chemical Sensors Club, HSE Laboratory, Sheffield*, April "Integrated sensor arrays in the Warwick electronic nose"
606. **Gardner JW** and Bryanston-Cross PJ 1989 *Microengineering Report 77*, University of Warwick "Automated feature extraction from surfaces and interferograms by optical techniques"
607. **Gardner JW** and Bartlett PN 1989 *Microengineering Report 82*, University of Warwick "Chemical sensing using a multisensor array and pattern recognition"
608. **Gardner JW** and Tan TT 1989 *Conf. on Solid State Physics*, University of Warwick, December "Current Voltage characteristics of metal-conjugated polymer heterocontacts"
609. **Gardner JW** 1988 *Eurosenors II Conf.*, University of Twente, November "Electrical characteristics of semiconductor gas sensors"
610. Shurmer HV, **Gardner JW** and Dalby D 1988 *Eurosenors II Conf.*, University of Twente, November "Pattern recognition for gas sensor arrays"
611. **Gardner JW** and Hines EL 1988 *Proceedings of IEE Colloquium on New Trends in Sensor array Processing 1988/30* 7/1-4 "Integrated sensor array processing in an electronic nose"
612. **Gardner JW**, Dalby D and Shurmer HV 1988 *Microengineering Report 68*, University of Warwick "Results of feasibility study on detection of oil leaks from underground cables"
613. **Gardner JW** 1987 *Coresta Conf.*, Bournemouth, September "Application of regression theory to tobacco machinery"
614. Bryanston-Cross PJ, Andonov DA and **Gardner JW** 1987 *FASTIG Colloquium*, University of Loughborough, November "Interferometric fringe processing applied to a 1000 C combustion flame"

615. **Gardner JW** 1987 *8th Int. Congress of European Chemoreception Res. Organisation*, University of Warwick, July "Pattern recognition in the Warwick electronic nose"
616. Bryanston-Cross PJ, **Gardner JW** and White R 1987 *NEMA Conf.*, London, July "Harpichord vibration"
617. Byrne JP, **Gardner JW** and Hall SF 1986 *Conf. on Prototype & Research Reactors Managers*, March "Computational fire modelling of the Sizewell B reactor: a concern tree/fault tree analysis"
618. Byrne JP, **Gardner JW**, Hall SF and Shaw PM 1985 *UKAEA SRD Report R395*, December "Procedural details of a concern tree/fault tree analysis for Sizewell B PWR"
619. **Gardner JW** and Phillips DW 1984 *FREC/P 2*, February "Primary vessel perforation due to inner skirt impact"
620. **Gardner JW**, Byrne JP and Jowett J 1984 *CFRPAS 6*, March "Evaluation of impact damage in CDFR dropped bucket accidents"
621. **Gardner JW** et al 1984 *NNC Report PWR R907*, July "CTFT analysis of fire effects on C&I/electrical equipment"
622. Atkinson A and **Gardner JW** 1980 *AERE Report R29684*, February "The diffusion of Fe³⁺ in amorphous silica and the protective properties of silica layers"

Books Published (13):



Foreign translations (4):

