



## FULL LIST OF PUBLICATIONS

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(H-index of 75, i10-index 252 & 23,897 citations from Google May 2025)

### I. BOOKS, EDITED BOOKS & BOOK CHAPTERS

1. Book chapter: Guha P, Santra S and **Gardner JW** (2020) in *Semiconductor Gas Sensors 2<sup>nd</sup> 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 25<sup>th</sup> 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).
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  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.
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  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".
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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”.
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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.
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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"
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## II. REFEREED JOURNAL ARTICLES

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69. Chen Z, Zhou B, Xiao M, Bhowmick T, Padmanathan K, Yang L, Occhipinti L, **Gardner JW**, Hasan T 2024 *Science Advances* **10** “Real-time, noise and drift resilient formaldehyde sensing at room temperature with aerogel filaments”
70. Esfahani S, Dawson T, Urasinska-Wojcik, Cole M, **Gardner JW** 2024 *Proceedings* **97**. “Indoor air quality CO<sub>2</sub> thermally modulated SMR sensor”
71. Wardana INK, Fahmy SA, Gardner JW 2024 IEEE I2MTC “Low-cost SCADA/HMI with tiny machine learning for monitoring indoor CO2 concentration”
72. Wardana I, **Gardner JW** and Fahmy S 2024 **73** 2503612 *IEEE Trans Inst Meas* “Collaborative learning at the edge for air pollution prediction”
73. Wardana I, Fahmy S, **Gardner JW** 2023 *IEEE Sensor Letters* **7** No 11 “TinyML models for a low-cost air quality monitoring device”
74. Gardner E, **Gardner JW**, Udrea F 2023 *Sensors* **23** 681 “Micro-machined thermal gas sensors – a review”.
75. Wardana I, **Gardner JW** and Fahmy SA 2022 *Neural Computing & Applications* **34** pp.16129-16154 “Estimation of missing air pollution data using a spatiotemporal convolutional autoencoder”
76. Specht JP, Esfahani S, **Gardner JW** 2022 *IEEE Trans on Instrumentation and Measurement* **71** “Thermally modulated CMOS-compatible particle sensor for air quality monitoring”
77. Wardana I, **Gardner JW**, Fahmy S 2021 *Sensors* **21** 1064 “Optimising deep learning at the edge for accurate hourly air quality prediction”
78. 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”
79. Specht JP, Esfahani S, **Gardner JW** 2021 *IEEE Sensors Journal* **21** “AIN FBAR particle sensor with a thermophoretic sampling mechanism”
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81. Esfahani S, Rollins P, Specht J, Cole M, **Gardner JW** 2020 *IEEE Sensors* “Smart city battery operated indoor air quality monitoring system”
82. Esfahani S, Shanta M, Specht J, Xing Y, Cole M and **Gardner JW** 2020 *IEEE Sensors* “Wearable IoT electronic nose for urinary incontinence detection”
83. Esfahani S, Specht J, Jolly G, Cole M, **Gardner JW** 2020 *MDPI Proceedings* **56** 11 “Solidly mounted resonators for biomedical applications”
84. 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”
85. Xing Y, Urasinska-Wojcik, **Gardner JW** 2019 *Sens. Act. B* “Plasmonic enhanced CMOS non-dispersive infrared gas sensor for low-cost application”
86. 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”

87. 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”
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89. 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”
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97. 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”
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113. 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”
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399. **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”
400. 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”

401. 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”
402. 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”
403. 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”
404. Karout S, Racz Z, Capurro A, Cole M, **Gardner JW** and Pearce TC 2011 *Proc. 14<sup>th</sup> 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”
405. Aziz M, Che Harun F, Covington J and **Gardner JW** 2011 *Proc. 14<sup>th</sup> 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”
406. Covington J, Ouaret N, **Gardner JW**, et al. 2011 *Proc. 14<sup>th</sup> Int Symp on Olfaction and Electronic Nose, New York, May 3-5 AIP Conf.* “Detection and identification of inflammatory bowel disease by electronic nose”
407. Ali SZ, Ho W, Chowdhury F, Covington J, Moseley P, Saffell J, **Gardner JW** and Udrea F 2011 *Proc. 14<sup>th</sup> Int Symp on Olfaction and Electronic Nose, New York, May 3-5 AIP Conf. Proc. 1362 53-54* “A high temperature SOI CMOS NO<sub>2</sub> sensor”
408. **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”
409. 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”
410. Invited Paper: **Gardner JW** 2010 *3<sup>rd</sup> IBEC Symposium on Bioengineering and Biomedicine, Barcelona, Spain, 9-10 April 2010* “Artificial olfaction: a Warwick perspective”
411. Invited Paper: **Gardner JW** 2010 *EC FP7 COST nanoTP Workshop, Berlin, Germany, 18-19 March 2010* “CMOS based gas sensors: progress and problems”
412. Invited Paper: **Gardner JW** *Proceedings of EC Advanced Workshop on Infochemical Communication, Granada, Spain, 10-11 March 2010* “Smart piezoelectric chemoreceiver”
413. Cole M, **Gardner JW**, Pathak S, Racz Z, Challiss R and Markovic D 2010 *Proceedings of 7<sup>th</sup> 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”
414. 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”
415. 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”
416. 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”
417. 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”

418. 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”
419. 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”
420. 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”
421. 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”
422. 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”
423. **Gardner JW**, Nadarajan S and Kimber P, *Proceedings 6<sup>th</sup> 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”
424. Invited Paper: **Gardner JW**, Southampton Electrochemistry Society, 7-8 April 2008 “The electronic nose; the early days”
425. Che Harun FK, Taylor JE, Covington JA and **Gardner JW** *Proceedings 12<sup>th</sup> 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”
426. 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”
427. 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 7<sup>th</sup> IEEE Conference on Sensors*, 26-29 October, Lecce, 2008, pp. 78-81.
428. 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 7<sup>th</sup> IEEE Conference on Sensors*, 26-29 October, Lecce, 2008, pp. 1556-1559.
429. 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.
430. 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.
431. 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.
432. **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”
433. **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”
434. 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”
435. **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”

436. **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”
437. 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”
438. 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”
439. 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”
440. 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”
441. **Gardner JW**, Beeby L, Chappell M, Udrea F, Yates J and Dowson CG, *Proc. of the 24<sup>th</sup> IASTED International Multi-conference Biomedical Engineering*, 15-17 Feb. 2006, “Identification of staphylococcus aureus infections by volatile chemical headspace analysis”
442. Invited Paper: **Gardner JW**, CAPE lecture series, University of Cambridge, UK, 31 March 2006, “Microsensors and MEMS for chemical and biological detection”
443. 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”
444. 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”
445. Keynote Paper: **Gardner JW**, *Eurosensors XX, Gothenberg, Sweden, Sept. 2006*. “Technologies for chemical sensors and microsystems”
446. **Gardner JW**, Covington JA, Tan SL, and Pearce TC, *Eurosensors XX, Gothenberg, Sweden, Sept. 2006*. “A biologically inspired artificial olfactory mucosa”
447. 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”
448. Khawaja J, Cole M, **Gardner JW**, *Eurosensors XX, Gothenberg, Sweden, Sept. 2006*. “Gold nanoparticle CMOS sensor for VOC detection”
449. 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”.
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451. **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”
452. 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”
453. Acevedo J, Maldonado S, Al-Khalifa S, Gil P, and **Gardner JW**, *11<sup>th</sup> International Symposium on Olfaction and Electronic Noses*, Barcelona, Spain, 13-15 April 2005 “Design of a programmable, portable low cost electronic nose”

454. Pardo M, Sberveglieri G and **Gardner JW**, *11<sup>th</sup> International Symposium on Olfaction and Electronic Noses*, Barcelona, Spain, 13-15 April 2005 “Benchmarking feature selection for e-noses”
455. Invited Paper: **Gardner JW**, *IEE Seminar on MEMS Sensor Technologies*, London, UK 25 April 2005, “Smart tongue”
456. 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”
457. 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”
458. 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”
459. Pardo M, Sberveglieri G and **Gardner JW**, *Proc. 4<sup>th</sup> IEEE Conf. on Sensors*, Irvine, California, USA, Oct. 31 – 3 Nov. 2005, “Feature selection for high dimensionality data in chemical sensing”
460. Cole M, **Gardner JW**, Leonte I, Sehra G, Noh HS and Hesketh PJ, *Proc. 4<sup>th</sup> IEEE Conf. on Sensors*, Irvine, California, USA, Oct. 31 – 3 Nov. 2005, “Voltage modulated SAW microtrap system: smart assaying of biomaterials”
461. 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”
462. **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 balck/polymer composite materials”
463. Invited Tutorial: **Gardner JW**, *3<sup>rd</sup> NOSE Short Course on Fundamentals of Signal and Data Processing*, 21-26 March 2004. “Feature selection techniques”
464. Sun MC, Chetwynd DG, and **Gardner JW**, *Proc. of Euspen 2004*, Glasgow, Scotland, May-June 2004 “A simple microtensometer for polymeric microparts”
465. 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”.
466. 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”
467. 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”
468. 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”
469. 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”
470. 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”
471. 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”
472. 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”

473. 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”
474. 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”
475. **Gardner JW**, Boilot P, and Hines EL, *Proc. ISOEN, Latvia, 25-27 June 2003*. “Enhancing e-nose performance by data fusion and sensor selection”
476. 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”
477. **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”
478. 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”
479. 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”
480. Invited Paper: **Gardner JW**, *Nato Advanced Research Workshop on Electronic Noses and Explosive Detection, Coventry, 1-2 October 2003*. “Review of electronic nose technology”
481. 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”
482. Invited Tutorial: **Gardner JW**, *IEEE Sensors 2003 Conference, Canada, 22-24 October 2003*. “Electronic Noses: towards a nose-on-a-chip”
483. Invited Talk: **Gardner JW**, Georgia Institute of Technology, Atlanta, USA, September 2003. “Biosensors, Electronic Noses and Electronic Tongues”
484. 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”
485. Invited Paper: **Gardner JW** *Ist NOSE II Short Course, 24 Feb - 1 Mar, 2002*, “Applications of electronic noses”
486. Invited Paper: **Gardner JW** *Ist NOSE II Short Course, 24 Feb - 1 Mar, 2002*, “Market aspects”
487. Government report: *A Strategic Framework for 2015, Foresight Publication, DTI, March 2002*. DTI Pub 6030/3k/03/02/NP. URN 02/808
488. **Gardner JW** *Public Consultation Document, DTI Conference Centre, 14 March 2002*, “Sensors for trends for monitoring the environment, industrial health and safety”
489. 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”
490. 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”
491. 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”.
492. 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”.
493. Invited Paper: **Gardner JW**, Cole M, Udrea F *Proc. IEEE Sensors 2002, Florida, 12-14 June 2002*, “CMOS gas sensors and smart devices”.
494. 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”.

495. 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”.
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497. 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”.
498. Keynote Paper: **Gardner JW** *Proc. 9th Int. Meeting on Chemical Sensors, Boston, 7-10 July 2002*, “Electronic noses: from macro to nano scaled devices”.
499. Cole M, Guzman G and **Gardner JW** *Proc. Eurosenors XVI, Prague, September 2002*, “Smart ratiometric ASIC chip for a palm-top VOC monitor”.
500. 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”.
501. 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”.
502. Invited Paper: **Gardner JW** *Proc. NOSE II Workshop, Rome, 3-4 October 2002*, “An overview of the electronic nose market”.
503. Invited Talk: **Gardner JW** *Cambridge Physical Society Seminar Series, Cavendish Laboratory, Cambridge, UK, November 2002*, “Electronic noses: from macroscale to nanoscale devices”
504. **Gardner JW** *Advances in Sensor Technologies Symposium, Warwick University, February 2001* “Advances in Microsensors and MEMS”
505. Invited Talk: **Gardner JW**, *Electrochemical Seminar, Southampton University, March 2001*, “Micromachined structures for chemical applications”
506. 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”.
507. 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”
508. Fang Q, Chetwynd DG and **Gardner JW** *2<sup>nd</sup> Euspen Conference, May, 2001* “Tensile properties of conducting polymer fibres”
509. 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”
510. **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”
511. **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”
512. Keynote Paper: **Gardner JW** and Cole MV *5<sup>th</sup> Int. Conf. on Breath Odor, Tokyo, 1-2 July 2001* “Medical applications of electronic nose technology”
513. Invited Paper: Varadan VK and **Gardner JW** *8<sup>th</sup> 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”.
514. 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”

515. 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”
516. Searle GE, **Gardner JW**, Chappell M, Godfrey KR and Chapman MJ *12<sup>th</sup> 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”
517. Covington JA, **Gardner JW** and Briand D *8<sup>th</sup> Int. Conf. on Chemical Sensors, Basel, Switzerland, 3-5 July, 2000* “A polymer gate FET sensor array for detecting organic vapours”
518. Covington JA, **Gardner JW**, Toh C, Bartlett PN, Briand D and de Rooij NF *7<sup>th</sup> 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”
519. 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, *8<sup>th</sup> Int. Conf. on Chemical Sensors, Basel, Switzerland, 3-5 July 2000* “A cabin air analyser for automotive application”
520. Llobet E, Rubio J, Vilanova X, Brezmes J, Correig X, **Gardner JW** and Hines EL, *8<sup>th</sup> Int. Conf. on Chemical Sensors, Basel, Switzerland, 3-5 July 2000* “Electronic nose simulation tool centred on PSPICE”
521. de Matos R, Dow CS and **Gardner JW** *7<sup>th</sup> Int. Symposium on Olfaction and Electronic Noses, Brighton, UK, 20-24 July 2000* “Investigation of the growth characteristics of E. coli using headspace”
522. Boilot P, Hines EL, **Gardner JW**, Hero M, Fink C, Mitchell J and Spencer J *7<sup>th</sup> Int. Symposium on Olfaction and Electronic Noses, Brighton, UK, 20-24 July 2000* “Detection of bacteria causing eye infection using an electronic nose”
523. Cole M, **Gardner JW**, Covington JA, Fife D, Kwok CY, Brignell JE and Bartlett PN *14<sup>th</sup> European Conference on Solid-state Transducers, Copenhagen, Denmark, August 27-30, 2000* “Active bridge polymeric resistive device for vapour sensing”
524. Udrea F, Setiadi D, **Gardner JW**, Covington JA, Dogaru T and LU CC *14<sup>th</sup> 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”
525. Cole M, **Gardner JW**, Brignell JE and Bartlett PN *6<sup>th</sup> 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”
526. Lee SM, **Gardner JW**, Dyer DC, Bartlett PN and Tan YM *6<sup>th</sup> Joint Warwick-Tokyo Nanotechnology Symposium, Coventry, UK, 18-21 September 2000* “Silicon planar pellistor employing nanostructured films and a micro-hotplate”
527. Invited Paper: Varadan VK and **Gardner JW** *Proc. SPIE on Smart Electronics and MEMS, Newport Beach, USA, March 1999* “Smart tongues and smart noses”
528. **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”
529. **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”
530. 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”
531. 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”
532. **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”

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534. Singh S, Hines E L and **Gardner JW** *Proc. 3<sup>rd</sup> Int. Conf. on Artificial Neural Networks and Genetic Algorithms, 1998 Wein, Springer 537-540* “Classifier Systems based on possibility distributions: a comparative study”
535. **Gardner JW** *9<sup>th</sup> CIMTEC, Florence, Italy, June 1998* “Pattern recognition in gas sensing”
536. 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”
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538. Hatfield J, Covington JA and **Gardner JW** *Proc. of Int. Conf. on Chemical Sensors, Beijing, June, 1998* “GasFETs incorporating conducting polymers as gate materials”
539. **Gardner JW** *Proc. 5<sup>th</sup> Int. Symp. on Electronic Noses, Baltimore, USA., 27-30 Sept., 1998* “An electronic nose to diagnose illness”
540. Invited Talk: **Gardner JW** *South East Midlands branch of Institution of Agricultural Engineers, Silsoe, 3 March 1997* “Electronic noses: fabrication and application”
541. 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”
542. 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”
543. **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”
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545. **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”
546. Invited Paper: **Gardner JW** *Proc. of 3<sup>rd</sup> East Asian Conf. on Chemical Sensors, Seoul, Korea, 5-6 November 1997* “Diagnosing illness with an electronic nose”
547. Shin H W and **Gardner JW** *Proc. of 3<sup>rd</sup> East Asian Conf. on Chemical Sensors, Seoul, Korea, 5-6 November 1997* “A combined resistive and calorimetric gas sensor”
548. 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”
549. 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”
550. Invited Paper: **Gardner JW**, *The Institute of Physics Annual Congress, 23-25 April 1996, Telford, UK* “Chemical and biological silicon sensors”
551. Bartlett P N, Elliott J and **Gardner JW**, *Euroanalysis IX, 1-7 Sept. 1996, Bologna, Italy* “Applications of, and developments in, machine olfaction”
552. 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”
553. 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”

554. 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”
555. 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”
556. Invited Paper: **Gardner JW** *3rd International Symposium on Olfaction & Electronic Noses, Miami, Florida, 3-6 November 1996* “Electronic nose technology: present & future”
557. **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”
558. 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?”
559. Invited Paper: **Gardner JW** *10th Colloquium of Gas Analysis & Sensing Group, 16-17 December 1996, Swansea* “New electronic noses”
560. **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”
561. 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”
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563. **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”
564. 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”
565. **Gardner JW** and Bartlett PN *2nd International Symposium on Olfaction & Electronic Noses, Toulouse, France, 2-3 October 1995* “Microinstrumentation for odour sensing”
566. 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”
567. 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”
568. 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”
569. 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”
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572. **Gardner JW** *1994 Warwick-Tokyo Conference, Warwick, England, 19-23 September 1994* “Nanoparticle films for reliable semiconducting oxide gas sensor array devices”
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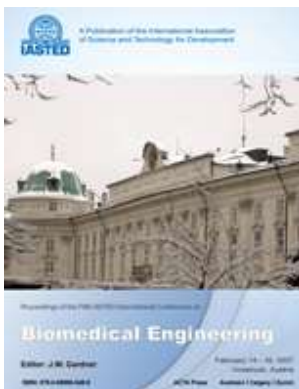
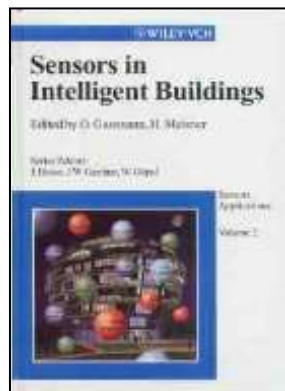
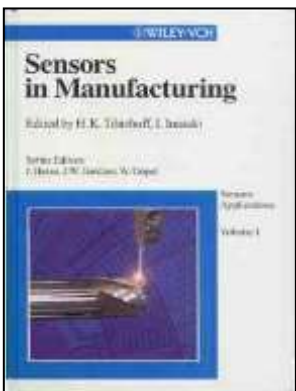
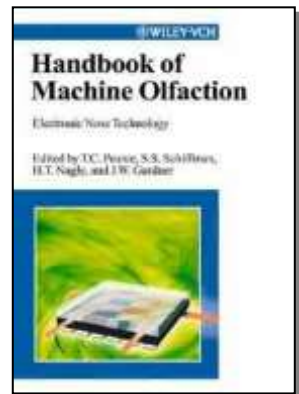
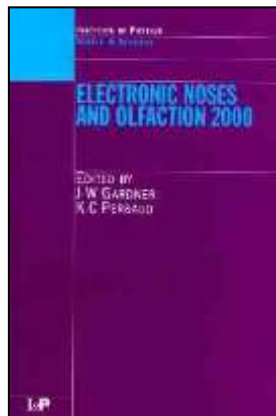
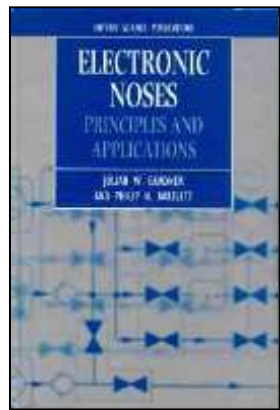
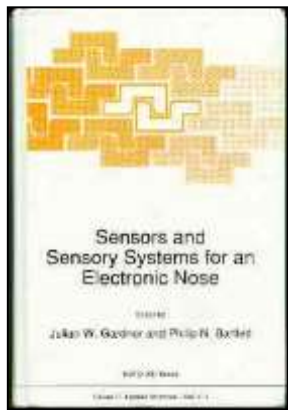
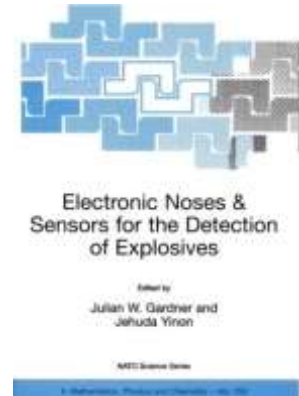
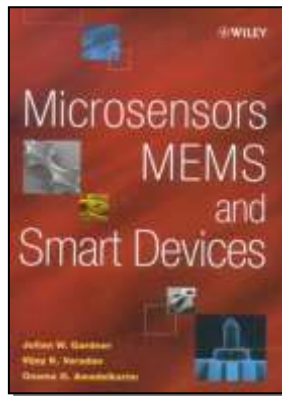
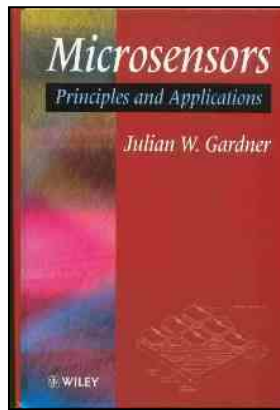
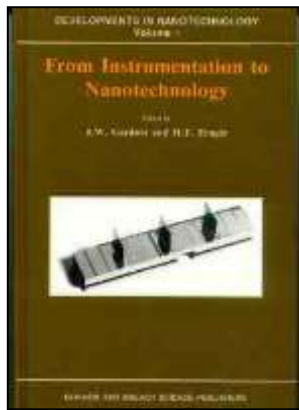
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577. Invited Paper: **Gardner JW** 1994 *Proceedings of 1st Int. Symposium on Olfaction & Electronic Noses, Toulouse, France, 26-27 September 1994* “Electronic nose technology today”
578. Elliot-Martin R, Bartlett P N and **Gardner JW** 1994 *Proceedings of 1st Int. Symposium on Olfaction & Electronic Noses, Toulouse, France, 26-27 September 1994* “Monitoring of breath odour in dairy cattle”
579. 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”
580. 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”
581. 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”
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583. 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”
584. **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”
585. 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”
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588. 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”
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590. **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”
591. 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”
592. Invited Paper: **Gardner JW** and Bartlett P N 1993 *Euroensors VII, Budapest, Hungary, 27-29 September 1993* “A brief history of electronic noses”
593. **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”

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599. **Gardner JW** 1992 *Workshop on Electronic Noses, Tubingen, Germany, 28-30 April* "Current R & D activities on Electronic Noses: A status report"
600. 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"
601. **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"
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603. 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"
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606. 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"
607. 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"
608. Bowen DK, Davies ST and **Gardner JW** 1992 *PEDAC '92, University of Warwick, UK, December 1992* "Fabrication processes for nanotechnology"
609. **Gardner JW**, Bartlett PN, Dodd GH and Shurmer HV 1991 *Institute of Non-destructive Testing, Northampton, February 20* "An electronic nose in process control"
610. 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"
611. **Gardner JW**, Shurmer HV and Tan TT 1991 *Microengineering Report* "Application of electronic nose to coffee discrimination"
612. Shurmer HV and **Gardner JW** 1991 *East-West Workshop on Microelectronic sensors, Sozopol, Bulgaria, May 7-9* "Odour discrimination with an electronic nose"
613. 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"
614. **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"

615. 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"
616. **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"
617. 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"
618. **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"
619. Invited Paper: **Gardner JW** 1991 *Sensors & Systems '91, NEC, Birmingham, 30-31 October 1991* "On-line monitoring of odours using chemical sensor arrays"
620. **Gardner JW** 1990 *Meeting on Trends in Gas Monitoring, SIRA Ltd, May* "The Warwick Electronic Nose"
621. Bartlett PN and **Gardner JW** 1990 *Physics World*, July "Nasal Nets catch the scent"
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623. 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"
624. **Gardner JW** 1990 *2nd Biennial Tokyo-Warwick Seminar*, University of Warwick, September "Potential applications of electropolymerised thin organic films in nanotechnology"
625. **Gardner JW** 1990 *Proceedings of SERC Advanced Vacation School*, University of Warwick, September 16-21 "Recent advances in solid-state microsensors"
626. 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"
627. **Gardner JW** 1989 *8th Interdisciplinary Surf. Sci. Conf.*, University of Liverpool "Properties of metal/poly-N-methylpyrrole schottky barriers"
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629. **Gardner JW** 1989 *8th Meeting of Chemical Sensors Club, HSE Laboratory, Sheffield*, April "Integrated sensor arrays in the Warwick electronic nose"
630. **Gardner JW** and Bryanston-Cross PJ 1989 *Microengineering Report 77*, University of Warwick "Automated feature extraction from surfaces and interferograms by optical techniques"
631. **Gardner JW** and Bartlett PN 1989 *Microengineering Report 82*, University of Warwick "Chemical sensing using a multisensor array and pattern recognition"
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633. **Gardner JW** 1988 *Eurosenors II Conf.*, University of Twente, November "Electrical characteristics of semiconductor gas sensors"
634. Shurmer HV, **Gardner JW** and Dalby D 1988 *Eurosenors II Conf.*, University of Twente, November "Pattern recognition for gas sensor arrays"
635. **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"
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637. **Gardner JW** 1987 *Coresta Conf.*, Bournemouth, September "Application of regression theory to tobacco machinery"
638. 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"

639. **Gardner JW** 1987 *8th Int. Congress of European Chemoreception Res. Organisation*, University of Warwick, July "Pattern recognition in the Warwick electronic nose"
640. Bryanston-Cross PJ, **Gardner JW** and White R 1987 *NEMA Conf.*, London, July "Harpichord vibration"
641. 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"
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