

Underwater Mass Spectrometers

2007

Bell, R.J., Short, R.T., van Amerom, F.H.W., and Byrne, R.H. (2007) Calibration of an in situ membrane inlet mass spectrometer for measurements of dissolved gases and volatile organics in seawater, *Environmental Science and Technology*, 41:23, 8123–8128.

2006

Short, R.T., Toler, S.K., Kibelka, G.P.G., Rueda Roa, D.T., Bell, R.J., and Byrne, R.H. (2006) Detection and quantification of chemical plumes using a portable underwater membrane introduction mass spectrometer, *Trends in Anal. Chem.*, vol. 25, no. 7.

2004

Kibelka, G.P.G., Short, R.T., Toler, S.K., Edkins, J.E., and Byrne, R.H. (2004) Field-deployed underwater mass spectrometers for investigations of transient chemical systems, *Talanta*, 64: 961–969.

Wenner, P.G., Bell, R.J., van Amerom, F.H.W., Toler, S.K., Edkins, J.E., Hall, M.L., Koehn, K., Short, R.T., and Byrne, R.H. (2004) Environmental chemical mapping using an underwater mass spectrometer, *Trends in Anal. Chem., Special issue on deploying mass spectrometers in harsh environments*, 23 288–295.

2001

Eaton, G., Short, R.T., and Fries, D.P. (2001) In-situ spectrometer is AUV-mounted, *International Ocean Systems*, 5/2 8–9.

Fries, D.P., Short, R.T., Langebrake, L.L., Patten, J.T., Kerr, M.L., Kibelka, G.P.G., Burwell, D.C., and Jalbert, J.C. (2001) In-water field analytical technology: underwater mass spectrometry, mobile robots, and remote intelligence for wide and local area chemical profiling, *Field Analyt. Chem. Technol.*, 5 121–130.

Short, R.T., Fries, D.P., Kerr, M.L., Lembke, C.E., Toler, S.K., Wenner, P.G., and Byrne, R.H. (2001) Underwater mass spectrometers for in-situ chemical analysis of the hydrosphere, *J. Am. Soc. Mass Spectrom.*, 12 676–682.

1999

Short, R.T., Fries, D.P., Toler, S.K., Lembke, C.E., and Byrne, R.H. (1999) Development of an underwater mass spectrometry system for in-situ chemical analysis, *Meas. Sci. Technol.*, 10 1195–1201.

Miniaturization and Microfabrication of Mass Spectrometers

2007

van Amerom, F.H.W., Chaudhary, A., Cardenas, M., Bumgarner, J., and Short, R.T. (2007) Microfabrication of cylindrical ion trap mass spectrometer arrays for handheld chemical analyzers, *Chem. Eng. Comm.*, 195, 98–114.

2006

Chaudhary, A., van Amerom, F.H.W., Short, R.T., and Bhansali, S. (2006) Fabrication and testing of a miniature cylindrical ion trap mass spectrometer constructed from low temperature co-fired ceramics, *Int. J. Mass Spectrom.*, 251, 32–39.

2005

Chaudhary, A., van Amerom, F.H.W., Bumgarner, J., and Short, R.T. (2005) Microfabricated cylindrical ion trap mass spectrometer arrays, *Proc. μ TAS 2005*, Boston, MA, 2, 1195–1198.

2004

Chaudhary, A., van Amerom, F.H.W., Bhansali, S., and Short, R.T. (2004) A novel fabrication technique of cylindrical ion traps using low temperature co-fired ceramic tapes, *Proc. 2004 Nanotechnology Conference and Trade Show*, 1, 371–373.

Novel and/or Miniature Power Sources

2008

Cardenas-Valencia, A.M., Adornato, L., Short, R.T., and Langebrake, L. (2008) Novel enhancement of thin-form factor galvanic cells: probing halogenated organic oxidizers and metal-anodes. Accepted for publication in *J. Power Sources*.

Cardenas, M.L., Cardenas-Valencia, A.M., Dlutowski, J., Bumgarner, J., and Langebrake, L. (2008) Automated single-use, valve chips based on thermally induced stresses for microfluidic applications. In preparation.

2007

Cardenas-Valencia, A.M., Biver, C.J., and Langebrake, L. (2007) Thin form-factor, hypochlorite-based galvanic cells for powering portable systems: manufacture (including MEMS processes), performance and characterization, *J. Power Sources*, 166(1), 273–283.

Cardenas-Valencia, A.M., Byrne, R.H., Calves, M., Langebrake, L., Fries, D.P., and Steimle, E.T. (2007) Development of stripped-cladding optical fiber sensors for continuous monitoring II: referencing method for sensing of environmental corrosion via multi-wavelength signatures, *Sensors and Actuators: B. Chem.*, 122(2), 410–418.

Cardenas-Valencia, A.M., Dlutowski J., Bumgarner J., Knighton, S., Biver, C., and Langebrake, L. (2007) Aluminum-anode, silicon-based micro-cells for powering expendable MEMS and lab-on-a-chip devices, *Sensors and Actuators: B. Chem.*, 122(1), 328–336.

Cardenas-Valencia, A.M., Dlutowski, J., Bumgarner, J., Munoz, C., Wang, W., Popuri, R., and Langebrake, L. (2007) Development of various designs of low-power, MEMS valves for fluidic applications, *Journal of Sensors and Actuators: A. Physical*, 136, (1) 374–384.

Cardenas, M.L., Cardenas-Valencia, A.M., Bumgarner, J., and Langebrake, L. (2007) Finite element modeling approach for the development of metal/silicon nitride MEMS single-use valve arrays, *J. Micromech. Microeng.*, 17 1671–1679.

Dlutowski, J., Biver, C., Wang, W., Knighton, S., Bumgarner, J., Langebrake, L., Moreno, W., and Cardenas-Valencia, A.M. (2007) Development of BCB-sealed galvanic cells. Case study: aluminum-anode cells activated with sodium hypochlorite electrolyte solution, *J. Micromech. Microeng.*, 17(8), 1737–1745.

2006

Cardenas-Valencia, A. M., Dlutowski, J., Bumgarner, J., Langebrake, L., and Moreno, W. (2006) Long shelf-life, Al-anode micro-fabricated cells activated with alkaline-H₂O₂ electrolytes, *J. Micromech. Microeng.*, 16, 1511–1518.

Cardenas-Valencia, A.M., Dlutowski, J., Fries, D., and Langebrake, L. (2006) Spectrometric determination of refractive index of optical wave guiding materials used in lab-on-a-chip applications, *Applied Spectroscopy*, 60(3), 322–329.

Cardenas-Valencia, A.M., Steimle, E., and Byrne, R. (2006) Development of stripped-cladding optical fiber sensors for continuous monitoring I: theoretical study of a referencing method for measuring refractive indices of fluids, *Sensors and Actuators: B. Chem.*, 115(1), 178–188.

Dlutowski, J., Cardenas-Valencia, A.M., Fries, D.P., and Langebrake, L. (2006) Refractive index determination of transparent polymers: experimental set-up for multi-wavelength determination and calculation of values at specific frequencies using group contribution theories, *Journal of Chemical Education*, 83, 1867.

2005

Janowiak, M.L., Cardenas-Valencia, A.M., Hall, M.L., and Fries, D.P. (2005) Development of a mobile sensing system for in situ water analysis based on solid-phase extraction-reflection spectroscopy, *Measurement Science and Technology*, 16, 729–737.

2003

Cardenas-Valencia, A.M., Challa, V.R., Fries, D., Langebrake, L., Benson, R.F., and Bhansali, S. (2003) A microfluidic galvanic cell as an on-chip power source, *Sensors and Actuators: B. Chem.*, 95(1–3), 406–413.

Cardenas-Valencia, A.M., Shastry, V., and Garcia-Rubio, L.H. (2003) Continuous monitoring of emulsion polymerization using spectroscopic techniques. In *In-situ Spectroscopy of Monomer and Polymer Synthesis*, ed. Puskas, J., Long, T.E., Storey, R.F., 83–108. New York: Kluwer Academic/Plenum Publishers.