

**JOSEPH D. JOLSON, Ph.D.**

5867 Solway Street  
Pittsburgh, PA 15217-1228  
[www.customclientsolutions.net](http://www.customclientsolutions.net)

Home: 412-421-5409  
Work: 412-480-3049  
[joe@customclientsolutions.net](mailto:joe@customclientsolutions.net)

---

**SUMMARY**

Over 30 years of industrial experience in business development, consulting, contract negotiation and management, formation of partnerships, project planning, proposal preparation and costing, product management and development, protection of intellectual property, operations start-up, sales and marketing, resource allocation, and RD&E. Knowledge of the analytical instrument, battery, government contracting, industrial hygiene and safety, and medical device businesses.

**PROFESSIONAL EXPERIENCE**

**CUSTOM CLIENT SOLUTIONS – Pittsburgh, PA**

**2004- Present**

**Owner**

Use knowledge of batteries, gas monitors, and respiratory protection equipment to provide business, management, and technical support to organizations. Provide technology based companies with idea generation, market research, market assessment, proposal preparation, product improvement, product development, product qualification, product certification, operations start-up, and market launch services. Provide equipment users with assistance selecting, calibrating, using, and placing batteries, gas monitors, and respiratory protection equipment.

Assist in accident, environmental & health, product liability, and intellectual property disputes. Provide law firms and insurance companies with literature review & evaluation, failure analysis & testing, forensic investigation, and expert witness services. Provide investment managers with company overviews, industry reviews, market analyses, and information on emerging technologies. Participate in proposal review panels.

**CSE CORPORATION – Monroeville, PA**

**2000 - 2004**

**Technical Director**

Developed new and improved emergency breathing and gas detection devices. Regularly interacted with quality, purchasing, production, sales, and vendor personnel to resolve operational issues. Supervised two electronics engineers, two chemists, a chemical technician, and a draftsman. Reported to the Chairman and CEO of CSE.

- Completed the design of and subsequently documented, qualified, and obtained CSA/NRTL and MSHA approvals on the *Explorer 4*, a portable microcontroller based 4-gas air quality monitor. Sourced battery packs, circuit boards, calibration caps, calibration gas, enclosures, and gas sensors. Drafted user's manuals and transferred know-how to operations. Doubled sales of multi-gas monitors while improving profit margins.

- Completed the design of and subsequently documented and qualified the *SR-50A* and *SR-100A* self contained self rescuers (SCSRs). After certification by the New South Wales Department of Mineral Resources for emergency escapes of up to 25 and 50 minutes, CSE entered the Australian marketplace and Company sales increased 20%.
- Designed, documented, and qualified the *SR-T*, a live training device used to simulate SCSR donning and breathing.
- Improved the *SR-100* SCSR by adding a temperature indicator, strengthening the dust shield, reducing nose clip discomfort, improving oxygen bottle reliability, reducing top plate assembly leakage, and reformulating the breathing hose material. Worked with NIOSH and MSHA to upgrade the device's 60-minute approval to 42CFR Part 84.
- Designed, documented, qualified, and prepared the NIOSH submission package for the *SR-50*, an SCSR intended for emergency escapes lasting up to 30 minutes.
- Designed functional prototypes of a low-cost emergency escape breathing device able to protect against smoke, fire, chemical, biological, and nuclear agents.
- Migrated the engineering change notice, parts cross reference list, and vendor information database to Microsoft Access. Placed the database on the server with the engineering drawings and related documents so they could be accessed as appropriate.

**MINE SAFETY APPLIANCES COMPANY, INC. – Pittsburgh, PA****1979 – 2000****Trace Gas Analysis Marketing and Applications Laboratory Manager (1996-2000)**

Responsible for business development and product management for the trace gas product line. Analyzed emerging technologies, performed qualification testing, and provided applications support. Supervised 10 staff members. Reported to the MSA Instrument Division General Manager.

- Developed a marketing and product development strategy that enabled MSA to enter the \$150 million/year chemical warfare agent detection market. Identified the Proengin *AP2C* as the best chemical warfare agent detector for the \$10 million/year domestic preparedness market. Helped negotiate a U.S. distribution agreement for the *AP2C*.
- Qualified the Passport® FiveStar, Passport PID II, Gasport®, and Mini Series® Responder industrial gas detection instruments; the Escort Elf® line of sampling pumps; and the MiniOX® line of medical instruments.
- Performed site assessments, trained sales personnel, exhibited products at trade shows, wrote product specifications, benchmarked competitor's products, prepared product launch packages, and provided customer support for a \$100 million/year division.
- Recommended technologies for the detection of anesthetic agents, chemical warfare agents, explosives, illicit drugs, industrial toxins, mercaptans, pesticides, and VOCs.
- Developed rapid qualification methods that helped increase revenue by \$500,000/year.
- Set-up a NIST traceable system for verifying the concentration of compressed gas.
- Evaluated batteries, case materials, gas sensors, and pumps for use in new products.

**Sensor R&D Manager****(1992-1996)**

Supervised 10 staff members in the fields of electrochemistry, combustion chemistry, and sensor science. Reported to the MSA Instrument Division Chief Scientist.

- Developed a low-cost package for electrochemical toxic gas sensors that anchored \$40 million/year in fixed and portable instrument sales.

- 
- Invented a state-of-the-art, low-power combustible gas sensor that enabled \$10 million/year in portable instrument sales.
  - Brought electrochemical sensor R&D capability to the MSA Instrument Division.
  - Set up the MSA Instrument Division catalytic combustible gas sensor R&D group.
  - Developed an OSHA compliant laboratory safety program and prepared MSDSs.

**Chemical R&D Manager**

**(1989-1992)**

Supervised 18 staff members in the fields of biomedical engineering, electrochemistry, materials science, mechanical engineering and electronics engineering. Reported to the General Manager of MSA's Catalyst Research Division.

- Developed sensors for the analysis of chlorine, ethylene oxide, hydrogen sulfide, nitric oxide, nitrogen dioxide, and oxygen that enabled \$5 million/year in instrument sales.
- Developed improved lithium-iodine and lithium-iron disulfide based thermally activated batteries that increased sales by \$5 million/year.
- Invented the lithium-silver oxide battery and an electrochemical sensor for breath-by-breath oxygen analysis.
- Designed prototype instrumentation for sensing medical gases.

**Program Manager – Specialty Batteries**

**(1985-1988)**

Recruited 20 administrative, production, development, and quality control personnel to staff a dedicated specialty battery facility. Reported to the General Manager of MSA's Catalyst Research Division.

- Coordinated a proposal preparation effort that led to a \$20 million multi-year award for the design and production of specialty batteries for the U.S. Government.
- Established facilities for the design and production of specialty batteries.
- Produced cadmium-mercuric oxide cells for qualification testing. Negotiated a \$1.5 million contract for the delivery of production cells.
- Acquired the technology to produce lithium-sulfur dioxide batteries.

**Senior Research Scientist – Battery R&D**

**(1979-1984)**

Supervised 2 chemists engaged in the development of high energy density lithium-carbon monofluoride, lithium-iodine, lithium-manganese dioxide, and lithium thionyl chloride batteries. Reported to the Director of Research of MSA's Catalyst Research Corporation.

- Invented a lithium-iodine battery chemistry with an order of magnitude increase in power density.
- Tested and selected materials that reduced the manufacturing cost of thermally activated batteries.
- Wrote proposals that led to the award of three U.S. Government R&D contracts.

**EDUCATION**

Ph.D. in Analytical and Electrochemistry – State University of New York at Buffalo  
B.S. in Chemistry – Brooklyn College

---

## **PROFESSIONAL ORGANIZATIONS**

American Chemical Society, Career Consultant  
ACS – Pittsburgh Section, Employment Committee Chair, past secretary and symposium chair  
Pittsburgh-Cleveland Catalyst Society  
Society for Analytical Chemists of Pittsburgh, Employment Committee Chair, past Pittcon staff

## **PATENTS**

Gas Sensor, J. Miller and J. Jolson, U.S. Patent #6,756,016, June 29, 2004

Gas Sensor, J. Miller and J. Jolson, U.S. Patent #6,344,174, February 5, 2002

Electrochemical Sensor with a Non-Aqueous Electrolyte System, T. Scheffler and J. Jolson, U.S. Patent #5,944,969, August 31, 1999.

Electrochemical Gas Sensor for the Detection of Nitrogen Dioxide, G. Hance, J. Jolson, and T. Scheffler, U.S. Patent #5,906,718, May 25, 1999.

Electrochemical Gas Sensor for the Detection of Nitrogen Dioxide, G. Hance, J. Jolson, and T. Scheffler, U.S. Patent #5,906,718, May 25, 1999.

Lithium-Silver Oxide Battery and Lithium-Mercuric Oxide battery, J. Jolson, U.S. Patent #5,658,688, August 19, 1997.

Electrochemical Toxic Gas Sensor, J. Jolson, and A. Schneider, U.S. Patent #5,338,429, August 16, 1994.

Thermal Battery, M. Williams, C. Winchester, and J. Jolson, U.S. Patent #4,840,859, June 20, 1989.

Method for the Detection of Noxious Gases, A. Schneider, D. Stewart, J. Jolson, R. Auel, and J. Price, U.S. Patent #4,797,180, January 10, 1989.

Electrochemical Cell for the Detection of Noxious Gases, A. Schneider, D. Stewart, J. Jolson, R. Auel, and J. Price, U.S. Patent #4,707,242, November 17, 1987.

Electrochemical Determination of Formaldehyde, R. Auel, J. Jolson, D. Stewart, U.S. Patent #4,692,220, September 8, 1987.

## **PUBLICATIONS and PRESENTATIONS**

Using ACS Employment Data to Encourage Networking by Ph.D. Chemists Entering the Workforce, J. Jolson, presented at the American Chemical Society Career Counselor Training Program held on January 26, 2013 in Dallas, TX.

Issues of Importance to Chemists Entering the Workforce, J. Jolson, presented to the American Chemical Society – Pittsburgh Section Younger Chemists Club on November 29, 2012.

Industrial Job Searching for Entry-Level Chemical Professionals, J. Jolson, presented to the Chemical Engineering Graduate Student Association of Carnegie Mellon University on May 18, 2012.

Overview of the Local Job Market for Chemical Professionals, J. Jolson, presented at the Job Searching for Chemical Professionals Workshop on February 9, 2013, February 4, 2012, February 5, 2011, April 10, 2010, February 7, 2009, February 2, 2008, and February 3, 2007 at the University of Pittsburgh's Chevron Science Center in Pittsburgh, PA.

Overview of the Local Job Market for Chemical Technicians, J. Jolson, presented at the Job Searching for Chemical Technicians Workshop on February 8, 2013, February 3, 2012, February 4, 2011, April 9, 2010, February 6, 2009, February 1, 2008, and February 2, 2007 at Bidwell Training Center in Pittsburgh, PA.

Underground Self-Rescuer Technology, Past, Present, and Future, J. Jolson, presented at the 3<sup>rd</sup> SCSR Workshop on July 25, 2006 at the MSHA Training Academy in Beckley, WV.

Respiratory Program Management: Current Issues, D. Abrams, J. Johnson, J. Jolson, and Z. Frund, presented as a professional development course on June 6, 1999 at the AIHCE in Toronto, Canada.

A Humidity Compensated Organic Vapor Monitor Using Photoionization Detection, J. Jolson, B. Dolgov, L. DeMaio, MSA Bulletin #1409-01, 1995.

The Effect of Altitude, Sample Port Inlet Loading, and Temperature on the Volumetric Flow Rate of the MSA Escort® Elf Constant Flow Rate Pump, A. Gero, P. Parobeck, K. Suppers, B. Apel, and J. Jolson, Appl. Occup. Environ. Hyg. 12(12):941-946 (December 1997).

Gas Sensing for Industrial Safety and Health, A. Schneider and J. Jolson, Proceedings of a Workshop on Gas Sensors, NIST Special Publication 865, September 1993.

Pacemaker Batteries - Past, Present, and Future, A. Schneider, J. Jolson, and I. Weinstock, presented at Cardiostim 92, June 1992.

The Lithium-Iodine Battery, J. Jolson, S. Wicelinski and D. Schrodtt, in Modern Battery Technology (C. Tuck, ed.) Ellis Horwood Limited, London, 1991, pp. 365-383.

Biomedical Applications for Low to Moderate Rate Batteries, S. Wicelinski, J. Jolson and A. Schneider, presented at the 5th Annual Conference on Applications and Advances, January 1990.

Measurement of the Components of the Ohmic Resistance in Lithium/Iodine (P2VP) Batteries, C. Streinz, R. Kelly, P. Moran, J. Jolson, J. Waggoner, and S. Wicelinski, presented at the ASTM Meeting, May 1988.

Recent Improvements in Li/SOCl<sub>2</sub> Cell Design, T. Watson, B. Codd, J. Jolson, M. Cole, Proceedings of the 32nd Power Sources Conference, June 1986.

---

Polarization in Li/I<sub>2</sub>(P2VP) Cells, J. Waggoner, J. Jolson, and D. Surd, Proceedings of the 32nd Power Sources Conference, June 1986.

Molten Lithium Anodes for Thermal Batteries, M. Williams, C. Winchester, and J. Jolson, Proceedings of the 32nd Power Sources Conference, June 1986.

Recent Advances in Lithium-Iodine Batteries with Pelletized Cathodes, D. Surd, J. Waggoner, and J. Jolson, presented at the 5th International Congress-Cardiostim 86, June 1986.

Continuous Electro-Oxidation of Ethylene Oxide in Air, R. Auel, D. Stewart, and J. Jolson, Electrochemical Society Extended Abstracts, May 1986.

The Development of an Ultra-Fast Electrochemical Oxygen Sensor for Respiratory Gas Analysis, J. Price, T. Lindsay, R. Flatau, and J. Jolson, presented at the Association for the Advancement of Medical Instrumentation meeting, May 1986.

Recent Improvements in Carbon Monoxide Sensing Devices, B. Miller, R. Auel, and J. Jolson, presented at the American Industrial Hygiene Conference, May 1986.

A Unique Method for the Detection of Ethylene Oxide, D. Stewart, R. Auel, and J. Jolson, Pittsburgh Conference and Exposition Extended Abstracts, March 1986.

Poly (3-Vinylpyridazine): Synthesis and Properties, N. Yang, S. Wang, C. Hou, J. Jolson, and J. Waggoner, Chem. Commun., 1985, 1632.

Effect of Heat Treatment on the Cathode Material of Lithium-Iodine Cells, N. Yang, L. Rodriguez, C. Hou, J. Jolson, Electrochemical Society Extended Abstracts, October 1985.

Study of Sources of Polarization in the Lithium-Iodine Solid State Battery, J. Waggoner, D. Surd, and J. Jolson, Electrochemical Society Extended Abstracts, October 1985.

An Investigation of the Rate-Limiting Mechanism in Lithium-Iodine Batteries via Electrochemical Impedance Spectroscopy, P. Kelly, P. Moran, D. Surd, and J. Jolson, Electrochemical Society Extended Abstracts, October 1985.

Recent Improvements in Carbon Monoxide Sensing Devices, R. Auel, J. Jolson, and B. Miller, presented at the 19th Middle Atlantic Regional Meeting of the ACS, May 1985.

Solid State and Polymer Electrode Battery Systems, A. Schneider, J. Jolson, and J. Waggoner, Proceedings of the 2nd International Conference on Lithium Battery Technology and Applications, March 1985.

Effect of Polymer Structure on the Rate Capability of the Lithium-Iodine Cell, D. Surd, J. Jolson, N. Yang, and C. Hou, Proceedings of the 31st Power Sources Conference, June 1984.

High Rate Lithium-Iodine Cells for Military and Commercial Applications, J. Jolson and A. Schneider, Proceedings of the 30th Power Sources Conference, June 1982.

Lithium-Iodine Batteries for Future Implantable Devices, A. Schneider and J. Jolson,  
Proceedings of the 34th Annual Conference on Engineering in Medicine and Biology, Vol. 23,  
September 1981.

The Adsorption and Oxidation of Carbon Monoxide in Strong Acid Solution, J. Jolson, Ph.D.  
Dissertation, September 1981.