

Dr. John B. Olson
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SUMMARY OF QUALIFICATIONS

Creative electrochemist with over 33 years of industrial R&D management and operations experience. A recognized expert in lithium-ion batteries, lead-acid batteries, ultracapacitors and other advanced batteries and battery management systems.

PROFESSIONAL EXPERIENCE

Jolson Technologies LLC

2017 - present

President and Founder

Focusing on battery investigations to support legal, safety or performance needs. We go beyond standardized testing and engineering to provide customized laboratory services. We provide Expert Witness services for lithium-ion batteries, lead-acid batteries and other energy storage. Do you have a battery related problem that needs a solution?

TDA Research

2007 - 2016

Senior Chemist

Exploring advanced materials technology for battery and ultracapacitor applications.

- Advancing modeling algorithms based on neural networks for battery management systems.
- Evaluated TDA's low cost, engineered pore size activated carbons for ultracapacitors.
- Invented new redox couples for flow batteries
- Demonstrated success of activated carbons as cathode matrix for secondary LiS batteries
- Developing hybrid ultracapacitor/battery designs
- Principle investigator for eight Phase I projects and one Phase II SBIR project

Boundless Corporation, Boulder, CO

2001 - 2007

Vice President, Technology and Member of the Board of Directors

Leader of battery research laboratory and technical operations. Technologies included: large format lithium-ion batteries and battery management; and materials for lithium-ion batteries such as high porosity separator and nano-scale cathode material.

- Principle investigator for four Phase II and nine Phase I SBIR projects as well as other private research contracts.
- Created novel lithium-ion battery state of health algorithms based on impedance techniques.
- Invented and reduced to practice structural lithium-ion batteries and ultracapacitors based on carbon fiber fabrics for aerospace battery applications.
- One patent awarded for a finish charge device for VRLA batteries.

Optima Batteries, Aurora, CO

1994-2001

Manager of Technical Research / Senior Electrochemist

Conducted research on high power spiral wound lead-acid batteries and was technical advisor to upper management. Manager of chemical, testing and prototyping labs.

- Brought Optima 'Yellow Top' deep cycle battery from lab to commercialization.
- Developed fast prototyping of 36 V battery prototypes for automotive use, which led to the acquisition of Optima by JCI.
- Lead for activities within an Army funded research consortium to develop 'smart' VRLA batteries.
- Managed technical activities for a three year DOE/GM program to develop high power hybrid electric vehicle batteries. Produced a prototype lead-acid battery with over 600 W/kg power capabilities.
- Created a novel charging algorithm recognized in the industry and adopted by several charger manufacturers.
- Invented a novel positive paste additive resulting in a doubling of cycle life. Two US patents issued.

Eltron Research, Boulder, CO

1992-1993

Senior Electrochemist

Managed two Phase II SBIR projects (DOE, NSF) involving the development of mixed conducting ceramic catalyst membranes for the decomposition of NO_x in diesel exhaust and for the oxidative coupling of methane to higher value compounds like ethane.

Unichem International, Golden, CO

1989-1992

Senior Research Chemist / Laboratory Manager

Key member of start-up effort to introduce novel oil production scale inhibitor product to US markets. Managed analytical chemistry laboratory, performed custom formulations, managed toll blending, and provided technical marketing to major oil companies.

- Formulated a polyelectrolytic scale inhibitor to precipitate at down hole temperatures during well fracturing treatments for BP at Prudhoe Bay, AK resulting in over \$2 million in sales for 1991.

Texas A&M University, College Station, TX

1987-1988

Research Associate (Post-doc)

Executed research on electrically conductive polymers using electrochemical impedance spectroscopy.

- Supervised 12 graduate students.

Colorado Interstate Gas, Rock Springs, WY

1979-1981

Plant Chemist

Managed analytical laboratory with one technician supporting natural gas sweetening plant operations.

- Created an innovative corrosion-monitoring program based on analysis of dissolved iron in process fluids by AA resulting in significant savings in maintenance operations.

Marathon Oil, Denver, CO

1978

Assistant Technician (Summer Intern)

Provided analytical wet chemistry support to petroleum research center.

Barringer Research, Englewood, CO

1977

Assistant Technician (Summer Intern)

Performed trace elemental analysis of geologic samples using x-ray fluorescence or AA spectroscopy.

EDUCATION

Ph.D. Chemistry (Analytical), University of Colorado, Boulder, CO., GPA: 3.9 **1987**

Thesis Title: The Electrochemistry of Metallocenes on Tungsten Diselenide Semiconductor Electrodes.

M.S. Chemistry (Organic, Analytical), University of Colorado, Boulder, CO., GPA: 3.9 **1984**

Thesis Title: A Study of the Bond Homolysis of Bis (3,5,5-trimethyl-2-oxomorpholin-3-yl).

B.A. Chemistry, The Johns Hopkins University, Baltimore, MD., GPA: 3.1 **1979**

(Graduated in only three years due to advanced placement and RPI summer chemistry program)

High Honors, Arapahoe H.S., Littleton, CO, GPA: 3.8 **1976**

ADVANCED SKILLS

- Superior research leadership, product development and project management capabilities.
- Outstanding proposal, technical report, and paper writing skills.
- Extremely resourceful, can operate within a limited budget. Sound understanding of business management.
- Efficient laboratory management, including compliance with all government regulations.
- Highly computer proficient including Excel macro programming, multi-variant statistics, neural network modeling and data reduction.
- Superb organization skills, time management and work ethic (always a team player).

PROFESSIONAL AFFILIATIONS

The American Chemical Society
The Electrochemical Society
The Denver Electric Vehicle Council

Papers and Publications

- J. Olson, G. May, A. Ferreira, G. Zguris, Editors Lead-acid Chapter 14, "Handbook of Batteries, 5th Ed", K Beard, editor, McGraw-Hill, New York, 2019.
- J. Olson, "Safety in Numbers (and Models)", Batteries and Energy Storage Technology Magazine, Winter, 2017.
- J. Olson, "The School of Battery Management Knocks", Batteries and Energy Storage Technology Magazine, Autumn, 2016.
- J. Olson, "Neural Networks for Battery Management Systems", *Proceedings of Battery Power 2016*, Denver, CO, August 2016.
- J. Olson, "How to make stupid, dumb, moronic lead batteries really smart (and take on the competition)", Batteries and Energy Storage Technology Magazine, Summer, 2016.
- J. Olson, "Neural Network Models Using Multiple Indicators for State of Charge and State of Health", Paper 22.3, *Proceedings of the 47th Power Sources Conference*, Orlando, FL, June 2016.
- J. Olson and S. Dietz, "Activated Carbons for Lead-acid Batteries", presentation for the Innovations for Lead-acid Batteries, Durham, N.C. 2014.
- J. Olson and J. Heinzl, "Neural Network Models for Battery Management Systems", Paper 33.4, *Proceedings of the 46th Power Sources Conference*, Orlando, FL, June 2014.
- S. Dietz and J. Olson, "Sugar Derived Carbons for Ultracapacitors", Paper 31.2, *Proceedings of the 45th Power Sources Conference*, Las Vegas, NV, 2012.
- J. Olson, D. Recla, T. Scholten, S. Dietz, "C/Si Composite Anodes for Advanced Lithium Ion Batteries", presented at the NASA Battery Workshop, Huntsville, AL (2009).
- S. Stephens, S. Madronich, F. Wu, J. Olson, R. Ramos, A. Retama, R. Munoz, "Weekly patterns of Mexico City's concentrations of CO, NO_x, PM₁₀ and O₃ during 1986-2007", *Atmos. Chem. Phys.*, 8, 5313-5325, 2008.
- J. Olson, N. Smith, C. Sheridan, P. Lyman, "Lithium-Ion Batteries for Electric and Hybrid Electric Vehicles", *AIAA 2006 4018*, 4th IECEC, San Diego, CA, June, 2006.
- J. Olson, S. Doherty, S. Myers, V. Lyman and K. Beard, "Novel High Porosity Separator for High Power Li-Ion Batteries", *presented at the 209th Electrochemical Society Meeting*, Denver, CO, May, 2006.
- J. Olson, T. Feaver and P. Lyman "A Finish Charge Device for Sealed Lead-Acid Batteries", *presented at the Conference for Advancements In Battery Charging, Conditioning, Monitoring And Testing*, Denver, CO, August, 2004.
- J. Olson, Z. Shaw, S. Doherty, P. Lyman, "A Structural Ultracapacitor Using Dual-Function Carbon Composite Electrodes", *Proceedings of the 41st Power Sources Conference*, Philadelphia, PA, June 2004.
- Qiguang Li, John B. Olson and Reginald M. Penner, "Nanocrystalline α -MnO₂ Nanowires by Electrochemical Step-Edge Decoration", *Chem. Mater. (Communication)*, 16(18), 3402-3405 (2004).
- P. Lyman, J. Olson, T. Feaver, "Application of Emerging Structural Battery Technology to Small Satellite Systems", *proceedings of the 18th Annual AIAA/USU Conference on Small Satellites*, Logan, UT, 2004.
- J.B. Olson, T.L. Feaver, P.C. Lyman, "Structural Batteries for Nanosatellites", *Proceedings of the 2003 NASA Aerospace Batteries Workshop*, Huntsville, AL, November 2003.
- J.B. Olson, T.L. Feaver, C. Pomasl, P.C. Lyman, "Structural Lithium-ion Batteries Using Dual-functional Carbon Fabric Composite Anodes", *Proceedings of the 14th International Conference on Composite Materials*, San Diego, CA. July 2003.
- J. Olson, W. Dubé, T. Feaver, and P. Lyman, "Conditioning and Maintenance of VRLA Batteries in High-Power Applications", *presented at the Conference for Advancements In Battery Charging, Conditioning, Monitoring And Testing*, Denver, CO, June, 2003.
- J. Olson, Z. Shaw, J. Jennings, V. Lyman, T. Feaver, and P. Lyman, "Structural High Power Energy Storage Panels Using Dual-Functional Carbon Fabric Composite Electrodes" *presented at the 2003 Space Power Workshop*, Redondo Beach, CA, April 2003.
- J.B. Olson, T.L. Feaver, C. Pomasl, P.C. Lyman, "Development of a Structural Lithium-ion Battery Panel," *Proceedings of the 40th Power Sources Conference*, Cherry Hills, NJ, June 2002
- E.D. Sexton, J.B. Olson, R.F. Nelson, "Life Prediction of Valve Regulated Lead-acid Batteries from Early Current/Voltage Data", *proceedings of the 16th Annual Battery Conference on Applications and Advances*, Long Beach, CA, 2001.
- R.F. Nelson, E.D. Sexton, J.B. Olson, M. Keyser, A. Pesaran, "Search for an optimized cyclic charging algorithm for valve-regulated lead-acid batteries", *J. Power Sources*, 88 (2000) 44-52.

- J.B. Olson and E.D. Sexton, "Operation of Lead-Acid Batteries for HEV Applications", *proceedings of the 15th Annual Battery Conference on Applications and Advances*, Long Beach, CA, 2000.
- J.B. Olson and E.D. Sexton, "Charging VRLA Batteries in Cycling Applications", *proceedings of the 14th Annual Battery Conference on Applications and Advances*, Long Beach, CA, 1999.
- J.B. Olson and E.D. Sexton, "Characterization of Plates from a Spiral Wound HEV Battery", *proceedings of the 14th Annual Battery Conference on Applications and Advances*, Long Beach, CA, 1999.
- J.B. Olson, "Electrical Management of Spiral Wound VRLA Batteries in Cycling Applications", *proceedings of the 33rd Intersociety Engineering Conference on Energy Conversion*, Colorado Springs, CO, 1998.
- J.B. Olson, E.D. Sexton, K.E. Murray, "Positive Plate Additives for Spiral Wound Lead-Acid Batteries", *proceedings of the 13th Annual Battery Conference on Applications and Advances*, Long Beach, CA, 1998.
- E.D. Sexton, J.B. Olson, "Coulombic Efficiency of a Sealed, Thin Plate, Spiral Lead-Acid Battery", *proceedings of the 13th Annual Battery Conference on Applications and Advances*, Long Beach, CA, 1998.
- A. Pesaran, S. Burch, R. Rehn, D. Swan, J.T. Guerin, J.B. Olson, G. Skellenger, "Thermal Analysis and Performance of a Battery Pack for a Hybrid Electric Vehicle", *proceedings of the 15th Electric Vehicle Symposium*, Brussels, Belgium, 1998.
- J.B. Olson, E.D. Sexton, "A High Power Spiral Wound Lead-Acid Battery for Hybrid Electric Vehicles", *proceedings of the 12th Annual Battery Conference on Applications and Advances*, Long Beach, CA, 1997.
- J.B. Olson, "Characteristics of an Advanced Lead-Acid Spiral Wound Deep Cycle Battery", *proceedings of the 31st Intersociety Engineering Conference on Energy Conversion*, Washington D.C., 1996.
- J.B. Olson and N.H. Puester, "Development of a Spiral Wound Advanced Lead-Acid EV Battery", *proceedings of the 11th Annual Battery Conference on Applications and Advances*, Long Beach, CA, 1996.
- J.P. Martins, R. Kelly, R.H. Lane, J.B. Olson, H.D. Brannon, "Scale Inhibition of Hydraulic Fractures in Prudhoe Bay", *proceedings of the SPE Formation Damage Control Symposium*, Lafayette, LA, 1992.
- J.B. Olson, D.C. Moore, N. Holland-Jones, "A Temperature Activated Extended Lifetime Scale Inhibitor Squeeze System", *proceedings from Corrosion 92*, Houston, TX, 1992.
- J.B. Olson, P.K. Nolan, N. Holland-Jones, "The Chemical Dissolution of Barium Sulfate (Barite)", *proceedings from Corrosion 92*, Houston, TX, 1992.
- C.A. Koval and J.B. Olson, "Simultaneous Determination of Interfacial Energetics and Kinetic Currents at the WSe₂/Acetonitrile Interface", *J. Phys. Chem.*, 92, 6726 (1988).
- J.B. Olson and C.A. Koval, "Simple Jet Electrodes for Kinetic and Synthetic Purposes", *Anal. Chem.*, 60 (1), 88–90, 1988.
- C.A. Koval, J.B. Olson, B.A. Parkinson, "Ideal Polarizable Semiconductor-Solution Interfaces." *ACS Sym Ser.* (1988) 378, 438-450.
- C.A. Koval, J.B. Olson, "Preparation and Electrochemical Characterization of WSe₂ Electrodes Having a Wide Range of Doping Densities," *J. Electroanal. Chem.* (1987) 234, 133-143.
- J.B. Olson and T.H. Koch, "Kinetic and thermodynamic parameters for the formation of 3,5,5-trimethyl-2-oxomorpholin-3-yl (TM-3). A negative activation energy for radical combination", *J. Am. Chem. Soc.*, 108 (4), 756–761, 1986.

Patents

- U.S. Patent 5871862 Battery Paste Compositions and Electrochemical Cells for Use Therewith
 U.S. Patent 5998062 Battery Paste Compositions and Electrochemical Cells for Use Therewith
 U.S. Patent numbers 6,867,568: Battery Finish Charge Device