

David Zuckerbrod, Ph.D.

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Profile Experienced Scientist, with broad knowledge of electrochemistry, especially of energy related devices such as batteries, capacitors and fuel cells; working knowledge of laboratory instrumentation and electronics particularly as related to battery, fuel cell and capacitor testing; seeking suitable role as an expert in fuel cells or electrochemical energy storage.

Professional Experience

Electrochemical Solutions LLC, Baltimore, MD 2012 to present
CEO

- Provides electrochemical consulting services.
- Expertise includes batteries, capacitors, fuel cells, electrolysis and corrosion.
- Provides expert witness services in battery-related court cases.

FlexEI LLC, College Park, MD 2012 to 2014
Principal Scientist

- Provided technical leadership for the development and commercialization of high power alkaline cells for a custom OEM application.
- Provided electrochemical expertise and real world experience to keep cell development activities on track and productive.

BAE Systems Inc. Rockville, MD 2008 to 2012
Principal Scientist

- Managed Analytical Chemistry Group charged with analyzing battery failures and anomalous behaviors. This included a full suite of chemical analyses, electrochemical testing and CT imaging.
- Provided subject matter expertise on batteries and electrochemical measurements
- Served as final reviewer of test reports issued to customers
- Devised innovative solutions to customer problems
- Maintained role of Chairman of safety committee

W. L. Gore & Associates Elkton, MD 1994 to 2008
Electrochemical Technologist

- Provided technical leadership to W. L. Gore's Battery and Capacitor Team for fourteen years
- Interfaced with customers to solve customer issues
- Helped solve production and scale-up issues on the path to commercialization
- Provided technical direction for R&D efforts from the product concept throughout product development
- Designed and tested electrodes for lithium ion and lithium primary batteries including test vehicle development and statistical design of experiments
- Tested and provided technical support for electrodes for electrochemical double layer capacitors, including diagnosis and resolution of customer issues
- Invented novel gas diffusion membranes and air cathodes for zinc-air batteries to eliminate expensive materials and improve performance of hearing aid batteries
- Commercialized low resistance PTFE separators for batteries and capacitors. This material significantly increased the energy density of lithium primary cells and enabled the commercialization of a new class of supercapacitors.
- Developed and tested membranes and electrodes for PEM fuel cells. This type of membrane is used in many of the fuel cell vehicles on the road today.

W. R. Grace & Co.

1988 to 1994

Senior Research Chemist

- Served as Principal Investigator on U. S. Advanced Battery Consortium (USABC) lithium-polymer electric vehicle battery program at Washington Research Center. This was a \$27 million program.
 - Prepared the proposal
 - Interfaced with subcontractors and sponsors
 - Prepared reports
 - Set up test facilities
 - Helped design and set up a pilot production facility including the largest controlled atmosphere glove box in the world
 - Provided technical direction to a large and diverse project
- Developed and tested novel alkaline battery separator for aircraft batteries
- Developed and tested novel shut-down separator for lithium cells. IP was generated which was the basis for separators in all lithium ion cells today.
- Developed and tested rechargeable lithium batteries aimed at the cellular phone market

Westinghouse Electric Corp.

1981 to 1988

Senior Engineer A

- Served as Principal Investigator on DOE Iron-Air Battery Program at Research Development Center, a \$5 million program
 - Prepared the proposal
 - Designed the electrodes and cell
 - Tested the cells and prepared reports
 - Designed and built a computer controlled battery cycler
- Tested silver-iron batteries for a military application
- Diagnosed and devised solution to problems in nickel-iron EV cells
- Invented novel magnesium-sea water batteries for a sea-floor application
- Built test stands and tested solid oxide steam electrolysis cells for hydrogen production
- Built test stands and tested solid oxide fuel cells and phosphoric acid fuel cells for use in large scale power generation

Education

Ph.D., Inorganic Chemistry, Rensselaer Polytechnic Institute

B.S., Chemistry, Rensselaer Polytechnic Institute

Other Credentials

Project Management Professional (PMP) from the Project Management Institute
Certified Fire and Explosion Investigator (CFEI) from the National Association of Fire Investigators

Memberships

- American Chemical Society
- Project Management Institute
- National Association of Fire Investigators