

RÉSUMÉ

Roger Louis Schneider, Ph.D.

Consultant and Contract Researcher in Energetic and other Hazardous Materials
Accident Investigator

Co-owner and President of,

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1.0 Areas of Expertise

- 1.1 Energetic Materials (EM) [Pyrotechnics, Explosives and Propellants (PEP)]
 - 1.1.1 Chemical formulation, testing and evaluation of EM.
 - 1.1.2 Chemical and spectroscopic analysis of EM.
 - 1.1.3 Deformulation of pyrotechnic compositions.
 - 1.1.4 Design and construction of equipment and development of technologies for the environmentally sensitive destruction of waste EMs and the decontamination/deconstruction/demolition of EM manufacturing and processing facilities.
 - 1.1.5 Safety and risk management associated with EMs (and other hazardous materials).
- 1.2 Pyrotechnics as fireworks
 - 1.2.1 Dynamics modeling and calculations
 - 1.2.2 Design and manufacture of display and consumer fireworks (US DOT 1.3G and 1.4G explosives, respectively).
 - 1.2.3 Field and laboratory testing and analysis of display and consumer fireworks and their components.
 - 1.2.4 Regulations, standards and codes pertaining to the manufacture, sale and use of display and consumer fireworks.
 - 1.2.5 Pyrotechnic operator of public displays of fireworks.
- 1.3 Investigation-Evaluation-Accident Reconstruction of accidents involving fireworks, other chemical explosions, and/or fire, physical explosions, and non-combusting hazardous materials.
- 1.4 Chemical engineering design and analysis involving combustion and/or other hazardous processes.
- 1.5 Expert witness in litigation and criminal cases.

2.0 Relevant Experience

- 2.1 Principal and/or Special Industrial/ Governmental Clients
 - 2.1.1 U.S. Army Corps of Engineers
Engineer Research and Development Center-Construction Engineering Research Laboratory (USA ERDC-CERL), Champaign, IL 1986-present

1991-97: Contract R&D efforts in EM production wastes disposal.
Working as a chemical engineer/ explosives expert, Dr. Schneider was the principal technical investigator on a six

year project in which alternatives to open burning/open detonation of waste PEP (pyrotechnics, explosives and propellants) were evaluated or designed and then developed for U.S. Army needs. He played the principal role in the design and development of a very high pressure waterjet cutting system for the pretreatment of energetic material production wastes. During this period in which he received two US Army awards for excellence, he collaborated with researchers at the Los Alamos National Laboratory (NM), Sandia National Laboratory (NM), Idaho National Engineering Laboratory (ID), Lonestar Army Ammunition Plant (TX), Radford Army Ammunition Plant (VA), Dugway Proving Ground (UT), Naval Research Laboratory (Washington, DC), USACERL, and several commercial firms.

1996-2003: Contract R&D efforts in AAP building decontamination and destruction.

Fundamental research investigation of the adsorption of explosives on the asbestiform, chrysotile, and on other building materials, including wood. Evaluating and assessing and/or developing technologies for the qualitative and quantitative analysis of energetic material contamination in US Army Ammunition Plant (AAP) buildings. Developing technologies to safely raze obsolete AAP processing buildings, which are contaminated with asbestos containing building materials, lead-based paints and residual PEP. At the end of FY2003, Dr. Schneider had completed work on the tenth contract in this series awarded to Rho Sigma Associates.

2004-2007: Contract R&D efforts in the Exploitation of Thyroid Chemistry for Perchlorate Detection.

Fundamental research effort having investigated the uptake of perchlorate anion at the thyrocyte sodium iodide symporter (NIS) towards developing a microfluidic device for the highly selective and sensitive detection of the perchlorate anion in drinking water.

1986-1991: Contract R&D efforts in the evaluation, assessment and disposal of asbestos containing building materials.

Note: A separate résumé detailing Dr. Schneider’s expertise in asbestos is available.

Dr. Schneider’s research and development efforts for the U.S. Army Corps of Engineers reflect the Corp’s interest in technologies which are cost-effective and “green,” that is, environmentally benign (minimizing energy expenditure and contamination, while employing “reduce-reuse-recycle” guidelines).

2.1.2	U.S. Army RDECOM Aberdeen Proving Ground, MD	2005-2006
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2005-2006: Contract R&D efforts in the reformulation and analysis of colored signal smokes. Developed a procedure, including the design and construction of custom glassware, for the laboratory scale synthesis of potassium dinitramide (KDN).

2.1.3	Bartolotta’s Fireworks Co., Inc. Genesee Depot, WI	1974-present
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2.1.4	Zenith Specialties Clinton, MO	1995-present
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2.1.5	B.J. Alan Company Youngstown, OH	1996-present
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2.1.6	The Walt Disney Co.	1999/2000, 2005
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2.1.7	Sunset Fireworks, Ltd. Dittmer, MO	2002-2005
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2.1.8	Global Pyrotechnic Solutions, Inc.	2002-present
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Dittmer, MO

- 2.1.9 Pyro Spectaculars, Inc. 2003-2006
- 2.1.10 Fireworks by Grucci 2004-present
- 2.1.11 Pyrotechnique by Grucci, Inc. 2004-present
- 2.1.12 Lakeside Fusee Corporation 1980-1995
South Beloit, IL
- 2.1.13 S.C. Johnson & Son, Inc. (Johnson Wax) 1987/88, 1994/95, 2001/02, 2005-present
Racine, WI
- 2.1.14 American Scientific Glassblowers Society 1985-present
Seminar instructor at annual symposia:
Toronto, Canada (1985); Cincinnati, OH (1986); Boston, MA (1987);
Milwaukee, WI (1989); Albany, NY (1991); San Diego, CA (1993); Bloomingdale, IL (2005)
Topics:
Combustion Chemistry and Engineering
Glass reactor design; heat and mass transfer considerations and explosion hazards;
Fire and explosion hazards evaluation
Glass Fracture

Note: Dr. Schneider is a professional scientific glassblower, skilled in both bench and lathe work. He specializes in the design and construction of glass high vacuum systems. A separate résumé detailing Dr. Schneider's expertise in scientific glassblowing is available.

- 2.1.15 KTCA-TV, PBS program "*Newton's Apple*"
Minneapolis, MN
Guest Expert: TV Program on Fireworks, March 1988

- 2.1.16 National Broadcasting Co. (NBC), program "*Late Nite with David Letterman*"
New York, NY
Guest Expert:
Fireworks segment, October 4, 1989
Combustion Science segment, June 29, 1990

- 2.1.17 The British Broadcasting Co./The Discovery Channel

The Discovery Channel documentary entitled "**Fireworks-An Explosive Story.**" In this BBC production, prepared for the Discovery Channel, Dr. Schneider appears in several segments as an expert, providing demonstrations and explanations of pyrotechnic phenomena. The documentary was first broadcast on 02July 2001.

2.2 Law Firms

As of the date of this resume, Dr. Schneider has been retained as a technical consultant and expert witness in 421 lawsuits and 19 criminal cases. These cases have been venued in many states and in state and federal courts. Prior to 2002, he had been retained on behalf of nearly an equal number of plaintiffs and defendants. Since then, Dr. Schneider has been retained more frequently as a defense expert. He has never failed to qualify as an expert.

2.3 Invited lecture-demonstrations / Guest speaker engagements

Since 1978, Dr. Schneider has presented many lecture-demonstrations on the physics, chemistry and engineering of fireworks. Several of these invited presentations have been given at universities and colleges in Wisconsin and Illinois to students and faculty, as colloquia, and to members of local chapters of the American

Chemical Society, and to local and state fire fighting personnel. Dr. Schneider has been a frequent speaker at the annual American Pyrotechnics Association (APA) Meetings/Conventions, the APA Winter Education Conferences, and seminar speaker and banquet keynote speaker at National Fireworks Association Expos. In June 2003 and 2004, he was a lecturer at the “Special Topics in Pyrotechnics” seminar held at Washington College, Chestertown, MD.

2.4 Service on Technical Committees

2.4.1 As a pyrotechnics and blackpowder expert, selected to serve on the National Academy of Sciences (NAS), National Research Council technical committee on the “Tagging of Smokeless and Black Powders.” Period of service: January-November 1998. The committee’s efforts culminated in the publication of the report entitled “Black and Smokeless Powders-Technologies for Finding Bombs and the Bomb Makers,” National Academy Press, Washington, D.C., 1998. Dr. Schneider continues his service to the NAS, reviewing manuscripts slated for publication by the National Academy Press.

2.4.2 Selected to serve on the Advisory Board of the National Council on Fireworks Safety. Period of service: October 1999 to present.

2.5 International Services

2.5.1 Philippines: As one of three instructors, provided the training in the chemistry and physics of fireworks, risk management, and industrial hygiene to 300+ attendees of the “Pyrotechnics Technology Improvement Training Seminar”, Malolos, Bulacan, Philippines, 21-26 June 1999.

2.5.2 Canada: Served as a member of a four man team organized and administered by the Canadian Explosives Research Laboratory, Nepean, Ontario, conducting a HAZOP study of specialized fireworks equipment for a prominent U.S. company. A non-disclosure agreement precludes disclosing the U.S. client or detailing the nature of the effort. A HAZOP, which stands for Hazards and Operability, refers to a formal evaluation of hazards associated with the use of equipment or processes, whereby hazards are identified and risks assessed. This HAZOP was performed during the period of May 1999-January 2000.

2.5.3 Italy: Served as one of seven judges for the 6th International Fireworks Competition in San Remo, Italy, held during the period of 01-13 July 2002. The contestants represented Japan, Portugal, Austria, Italy, Spain, and the USA.

2.5.4 International: Served as a conference co-chairman and member of the proceedings technical committee for the 3rd - 12th International Symposium on Fireworks (ISF), held respectively in Orlando, FL 16-20 September 1996, Halifax, Nova Scotia, 09-13 October 1998, Naples, Italy, 10-14 April 2000, Orlando, FL, 03-07 December 2001, Valencia, Spain, 06-10 October 2003, Otsu, Shiga, Japan, 18-22 April 2005, Berlin, Germany, 03-07 April 2006, Montreal, Canada, 15-19 October 2007, Puerto Vallarta, Mexico, 20-24 April 2009, and Porto/Gaia, Portugal, 11-15 October 2010. The Canadian Explosives Research Laboratory has had the principal role in organizing the first five international symposia. The 6th - 12th ISF were organized by the International Symposium on Fireworks Society (ISFS), of which Dr. Schneider is the Vice Chairman. The 13th ISF is scheduled for 23-27 April 2012 in Malta. A photo of Dr. Schneider and a brief biography are shown under the “Board of Directors and Advisors” tab on the ISFS website, www.ISFireworks.com.

3.0 Relevant Education

Ph.D. Physical Inorganic Chemistry, Minors in Mechanical Engineering and Physics. University of Wisconsin-Milwaukee (UWM), 1982. Post-Doctoral research in catalysis at UWM, 1982-1983.

Well read in both Military and Civilian Pyrotechnics. Frequent practical, hands-on experience in working with pyrotechnic materials during the last 45+ years, which has included the design and construction of display and consumer fireworks.

Also well read in the areas of Explosives, Propellants, Combustion Science and Hazardous Materials Management. Completed several short courses on Fire and Explosion Hazards Evaluation presented by the American Chemical Society and American Institute of Chemical Engineers. Considerable experience in the use of commercial high explosives. Ten years industrial experience in working with drum quantities of flammable solvents and other hazardous materials. More than forty years of practical laboratory experience in working with flammable and toxic gases, flammable liquids and solids and other hazardous materials.

4.0 Society/Association Memberships

- 4.1 International Symposium on Fireworks Society
- 4.2 International Pyrotechnics Society
- 4.3 American Chemical Society
- 4.4 National Fire Protection Association

5.0 Military Experience

Commissioned as an Ensign (O-1) through the U.S. Navy's Officer's Candidate School, Newport, RI, in 1971. Served on active duty as an Electronics Materials Officer and Navigator aboard a destroyer, homeported in Naples, Italy, 1971-1974. Released from active duty in 1974 and affiliated with the Naval Reserves. Captain (CAPT) Schneider (O-6) retired from the Naval Reserves on 01 March 1998 with 27 years of service. He was last assigned to the reserve unit: NR CNO NO91 International Arms Cooperation 206, having performed his reserve duties in the Pentagon and Crystal City offices of the Chief of Naval Operations, Washington, DC. As an executive assistant to the Senior Naval Representative for International Arms Cooperation, CAPT Schneider reviewed and evaluated foreign military technologies involving energetic materials. He also collaborated with principal investigators at the Office of Naval Research, Arlington, VA. CAPT Schneider assisted in the organization and administration of three workshops on energetic materials, and reviewed and compiled for distribution the 6.1 (fundamental) research papers presented. The research results presented at these workshops dealt primarily with the synthesis and characterization of new molecular explosives, theoretical molecular modeling and calculations, and theories of detonics. CAPT Schneider also actively participated in related information exchange meetings with EM researchers at multiple locations in Great Britain and France. On annual active duty, he worked at the Naval Research Laboratory, Washington, DC, doing single crystal x-ray crystallography of molecular explosives.

6.0 Publications

A list of publications can be provided upon request.

Revised: 07 November 2011

Printed: 22 November 2011

PHYSICAL-CHEMICAL AND ENGINEERING CONSULTANTS SINCE 1974

Pyrotechnics * Explosives * Propellants * Combustion Science and Technology * Asbestos * Electromagnetics
Static Electricity * Material Science * Heat transfer and Fluid Mechanics * Accident Investigation and Reconstruction
Scientific Demonstration Equipment Design and Construction * Expert Witnesses