Jay A. LaVerne
Curriculum Vitae

Present Position: Professional Specialist
Radiation Laboratory, University of Notre Dame
Concurrent Research Professor
Department of Physics, University of Notre Dame

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Birth: 12 January 1951; Port Arthur, Texas; U.S.A.

Education:

1972 B.S. Chemistry, Lamar University, Beaumont, Texas
1981 Ph.D. Physical Chemistry, University of Nebraska, Lincoln, Nebraska

Principal areas of research:

Chemical effects of particle track structure, radiation effects in condensed systems, interfacial radiation effects, radiation chemistry, heavy ion radiolysis, chemical physics, physical chemistry, environmental chemistry, and analytical chemistry.

Professional Employment History:

2004 - Concurrent Research Professor, Department of Physics, University of Notre Dame
1992 - Professional Specialist, Radiation Laboratory, University of Notre Dame
1986 - 1992 Associate Professional Specialist, Notre Dame Radiation Laboratory
1983 - 1986 Assistant Professional Specialist, Notre Dame Radiation Laboratory
1979 - 1983 Research Associate, Notre Dame Radiation Laboratory

Professional Duties and Responsibilities:

Principal Investigator in the “Radiation and Photochemistry in Condensed Phase” project in the Radiation Laboratory, University of Notre Dame

Group Leader, “Fast Linear Electron Accelerator” subtask, Radiation Laboratory, University of Notre Dame

Member of Executive Committee, Radiation Laboratory, University of Notre Dame

Radiation Effects Consultant, Los Alamos National Laboratory

Associate Editor – *Radiation Research*

Visiting Positions:

October-November 2004, Visiting Professor, The Institute of Scientific and Industrial Research, Osaka University, Osaka, Japan

September-October 1996, Visiting Fellowship of the Japan Society for the Promotion of Science, University of Tokyo, Tokyo, Japan

March-April 1985, Visiting Scientist, Atomic Energy Research Establishment, Harwell, United Kingdom

Professional Societies: memberships in American Chemical Society-Physical Chemistry Division, Radiation Research Society, Sigma Xi, and American Association for the Advancement of Science.

Journal activities: associate editor “Radiation Research” (2000-2005) regular referee for several Journals including "Journal of Physical Chemistry", "Radiation Physics and Chemistry", and “Journal of the American Chemical Society”.

Professional activities: chemistry councilor (2000-2003) of the Radiation Research Society, member of the oversight committee of the journal of *Radiation Research*, and organizer of many workshops and symposia for the meetings of the Radiation Research Society, International Congress of Radiation Research, and DNA Radiation Damage Workshops.

Principal areas of expertise:

Development and use of experimental radiolysis techniques: includes beta radiolysis, gamma radiolysis, fast electron pulse radiolysis, and heavy ion radiolysis (protons to uranium) using several accelerators worldwide.

Application and development of analytical techniques in radiation chemistry: includes the use of several analytical techniques such as gas chromatography, gas chromatography - mass spectrometry, liquid chromatography, ion chromatography, mass spectrometry, ion selective electrodes, spectroscopy, and others.

Theoretical physical track structure calculations: extensive computations involving basic physical concepts of energy loss and particle transport.

Diffusion-kinetic chemical model calculations: includes modeling of nonhomogeneous and homogeneous chemical reactions in aqueous solutions and in hydrocarbons.

Postdoctoral Associates:

M. Araos, Radiation chemistry of aromatic compounds.

E. A. Carrasco, Radiolysis of molecules at interfaces.

Z. Chang, Radiolysis of polymers.

E. Enomoto, Transient species in the radiolysis of organic compounds.

A. Hiroki, Hydrogen peroxide production in water radiolysis.

B. Milosavljevic, Radiolytic decomposition of aqueous chlorinated hydrocarbons.

P. Pastina, Scavenging of the hydrated electron and the production of hydrogen.

S. M. Pimblott, Modeling the radiation chemistry of water.

P. Rajesh, Environmental radiation chemical studies.

I. Stefanic, Scavenging studies of the hydrated electron.

Students Supervised:

N. Chitose, Heavy ion pulse radiolysis.

K. Hadley, Radiolytic degradation of polybutylene.

T. Mu, Scavenging of radicals in water radiolysis.

A. M. Seguin, Hydrogen production from aqueous iron oxide suspensions.

S. Tonnies, Hydrogen production from oxide suspensions.

Current Research Support:

Co-PI, “Radiation-Induced Dynamics in Condensed Phases and at Interfaces”, 2004-2006, Office of Basic Energy Sciences, U. S. Department of Energy, $3,000,000, (with Drs. S. M. Pimblott, D. Meisel, D. M. Chipman, and I. Carmichael, University of Notre Dame).

PI, “Hazardous and Corrosive Gas Production in the Radiolysis of Water/Organic Mixtures in Model TRU Waste”, 2003-2006, Environmental Management Science Program, U. S. Department of Energy, $600,000, (with Dr. S. M. Pimblott, University of Notre Dame).

PI, “Radiation Chemistry Related to PIT Certification”, 2005-2006, Los Alamos National Laboratory, U. S. Department of Energy, $10,000.

PI, “Radiolytic Decomposition of Water at Zirconia Interfaces”, 2004-2005, Bechtel Bettis, $82,000.

Pending Research Support:

PI, “Hydrogen Production using High Conduction Band Materials”, 2005-2008, Hydrogen Fuel Initiative, U. S. Department of Energy, $800,000 (with Drs. S. M. Pimblott and P. K. Kamat, University of Notre Dame).

Co-PI, “Radiation Induced Corrosion of Zircaloy”, 2005-2006, Idaho National Engineering and Environmental Laboratory, $50,000.

Recent Research Support:

PI, “Radiation Chemistry in Heterogeneous Systems”, 2000-2004, Office of Basic Energy Sciences, U. S. Department of Energy, FY03 $389,000, (with Drs. S. M. Pimblott and D. Meisel, University of Notre Dame).

Co-PI, “Radiation Effects in Homogeneous and Non-Homogeneous Systems”, 2000-2004, Office of Basic Energy Sciences, U. S. Department of Energy, FY03 $247,000, (with Dr. S. M. Pimblott, University of Notre Dame).

Co-PI, “Effects of Water Radiolysis in Water Cooled Reactors”, 2000-2003, Nuclear Energy Research Initiative, U. S. Department of Energy, $920,000 (with Drs. S. M. Pimblott and D. Meisel, University of Notre Dame and T. Orlando, Pacific Northwest National Laboratory).

PI, “Hazardous Gas Production by Alpha Particles in Solid Organic Transuranic Waste Matrices”, 1999-2002, Environmental Management Science Program, U. S. Department of Energy, $400,000.

PI, “Gas Generation and Modeling: Radiation Chemistry and Microdosimetry”, 2001-2003, Los Alamos National Laboratory, U. S. Department of Energy, $97,000.

PI, “Radiation Chemistry Related to PIT Certification”, 2003-2004, Los Alamos National Laboratory, U. S. Department of Energy, $20,000.

Journal Publications of Jay A. LaVerne:

1) J. A. LaVerne, I. Stefanic, S. M. Pimblott (2005) *Hydrated Electron Yields in the Proton Radiolysis of Water*, **Journal of the Japanese Society for Radiation Chemistry**, submitted.

2) J. A. LaVerne and L. Tandon (2005) *H_2 and Cl_2 Production in the Radiolysis of Calcium and Magnesium Chlorides and Hydroxides*, **Journal of Physical Chemistry A**, submitted.

3) J. A. LaVerne (2005) *H_2 Formation for the Radiolysis of Liquid Water with Zirconia*, **Journal of Physical Chemistry B**, submitted.

4) B. Milosavljevic and J. A. LaVerne (2005) *Pulse Radiolysis of Chlorinated Ethanes*, **Journal of Physical Chemistry and Chemical Physics**, submitted.

5) J. A. LaVerne, L. Tandon, B. C. Knippel, V. M. Montoya (2005) *Heavy Ion Radiolysis of Methylene Blue*, **Radiation Physics and Chemistry** *72*, 143-147.

6) B. C. Garrett, et al. (2005) *The Role of Water on Electron-Initiated Processes and Radical Chemistry: Issues and Scientific Advances*, **Chemical Reviews** *105*, 355-389.

7) J. A. LaVerne, I. C. Carmichael, M. S. Araos (2005) *Radical Production in the Radiolysis of Liquid Pyridine*, **Journal of Physical Chemistry A**, *109*, 461-465.

8) A. Hiroki and J. A. LaVerne (2005) *Decomposition of Hydrogen Peroxide at Water – Oxide Interfaces*, J. **Journal of Physical Chemistry B**, web released, in press.

9) B. Milosavljevic and J. A. LaVerne (2005) *Pulse Radiolysis of Aqueous Thiocyanate Solution*, **Journal of Physical Chemistry A** *109*, 165-168.

10) J. A. LaVerne, I. Stefanic, S. M. Pimblott (2004) *Hydrated Electron Yields in the Radiolysis of Water with Protons*, Proceedings of the Japanese Society for Radiation Chemistry, H. Kozumi ed. Hokkaido University, October 2004, 29-31.

11) J. A. La Verne and L. Tandon (2003), *H_2 Production in the Radiolysis of Water on UO_2 and Other Oxides*, **Journal of Physical Chemistry B** *107*, 13623-13628.

12) J. A. La Verne and S. E. Tonnies (2003), *H_2 Production in the Radiolysis of Aqueous SiO_2 Suspensions and Slurries*, **Journal of Physical Chemistry B** *107*, 7277-7280.

13) I.Stefanic and J. A. LaVerne (2002), *Temperature Dependence of the Hydrogen Peroxide Production in the Gamma-Radiolysis of Water*, **Journal of Physical Chemistry A** *106*, 447-452.

14) S. M. Pimblott and J. A. LaVerne (2002), *Effects of Track Structure on the Ion Radiolysis of the Fricke Dosimeter*, **Journal of Physical Chemistry A** *106*, 9420-9427.

15) J. A. LaVerne and M. S. Araos (2002), *Heavy ion radiolysis of liquid benzene*, **Journal of Physical Chemistry A** *106*, 11408-11413.

16) J. A. LaVerne and L. Tandon (2002), *H_2 Production in the Radiolysis of Water on CeO_2 and ZrO_2*, **Journal of Physical Chemistry B** *106*, 380-386.

17) A.Hitachi, J. A. LaVerne, et al. (2002), *Field Effects on Ionic and Excitonic Quenching for Heavy Ions in Liquid Ar*, **IEEE Transactions on Dielectrics and Electrical Insulation** *9*, 45-47.

18) A.Hiroki, S. M. Pimblott, et al. (2002), *Hydrogen peroxide production in the radiolysis of water with high radical scavenger concentrations*, **Journal of Physical Chemistry A** *106*, 9352-9358.

19) Z. Chang and J. A. LaVerne (2002), *The Gamma-Radiolysis of Nylons: Molecular Rearrangement and Gas Production*, **Journal of Physical Chemistry B** *106*, 508-514.

20) B. Pastina and J. A. LaVerne (2001), *Effect of Molecular Hydrogen on Hydrogen Peroxide in Water Radiolysis*, **Journal of Physical Chemistry A** *105*, 9316-9322.

21) J. A. LaVerne, Z. Chang, et al. (2001), *Heavy Ion Radiolysis of Organic Materials*, **Radiation Physics and Chemistry** *60*, 253-257.

22) N. Chitose, Y. Katsumura, et al. (2001), *Radiolysis of Aqueous Solutions with Pulsed Ion Beams. 4. Product Yields for Proton Beams in Solutions of Thiocyanate and Methyl Viologen/Formate*, **Journal of Physical Chemistry A** *105*, 4902-4907.

23) Z. Chang and J. A. LaVerne (2001), *Dynamic Evolution of Gases in the Gamma- and Helium-Ion Radiolysis of Solid Polymers*, **Journal of Polymer Science Part B-Polymer Physics** *39*, 1449-1459.

24) Z. Chang and J. A. LaVerne (2001), *The Gases Produced in Gamma and Heavy-Ion Radiolysis of Poly(methyl methacrylate)*, **Radiation Physics and Chemistry** *62*, 19-24.

25) S. M. Pimblott, J. A. LaVerne, et al. (2000), *Energy Loss by Nonrelativistic Electrons and Positrons in Polymers and Simple Solid Hydrocarbons*, **Journal of Physical Chemistry B** *104*, 9607-9614.

26) J. A. LaVerne (2000), *OH Radicals and Oxidizing Products in the Gamma Radiolysis of Water*, **Radiation Research** *153*, 196-200.

27) J. A. LaVerne (2000), *Track Effects of Heavy Ions in Liquid Water*, **Radiation Research** *153*, 487-496.

28) J. A. LaVerne and S. M. Pimblott (2000), *New Mechanism for H_2 Formation in Water*, **Journal of Physical Chemistry A** *104*, 9820-9822.

29) Z. Chang and J. A. LaVerne (2000), *Hydrogen Production in Gamma-Ray and Helium-Ion Radiolysis of Polyethylene, Polypropylene, Poly(methyl-methacrylate), and Polystyrene*, **Journal of Polymer Science Part a-Polymer Chemistry** *38*, 1656-1661.

30) Z. Chang and J. A. LaVerne (2000), *Hydrogen Production in the Heavy Ion Radiolysis of Polymers. 1. Polyethylene, Polypropylene, Poly(methyl methacrylate), and Polystyrene*, **Journal of Physical Chemistry B** *104*, 10557-10562.

31) B. Pastina and J. A. LaVerne (1999), *Scavenging of the Precursor to the Hydrated Electron by the Selenate Ion*, **Journal of Physical Chemistry A** *103*, 209-212.

32) B. Pastina and J. A. LaVerne (1999), *Hydrogen Peroxide Production in the Radiolysis of Water with Heavy Ions*, **Journal of Physical Chemistry A** *103*, 1592-1597.

33) B. Pastina, J. A. LaVerne, et al. (1999), *Dependence of Molecular Hydrogen Formation in Water on Scavengers of the Precursor to the Hydrated Electron*, **Journal of Physical Chemistry A** *103*, 5841-5846.

34) J. A. LaVerne and M. S. Araos (1999), *Radical Production in the Radiolysis of Liquid Benzene*, **Radiation Physics and Chemistry** *55*, 525-528.

35) N. Chitose, Y. Katsumura, et al. (1999), *Radiolysis of Aqueous Solutions with Pulsed Helium Ion Beams. 3. Yields of OH Radicals and the Sum of e_{aq}^- and H Atom Yields Determined in Methyl Viologen Solutions Containing Formate*, **Journal of Physical Chemistry A** *103*, 4769-4774.

36) Z. Chang and J. A. LaVerne (1999), *Molecular Hydrogen Production in the Radiolysis of High-Density Polyethylene*, **Journal of Physical Chemistry B** *103*, 8267-8271.

37) L. Wojnarovits and J. A. LaVerne (1998), *Comparison of the Linear Energy Transfer Effect in the Radiolysis of Cyclopentane, Cyclohexane and Cyclooctane*, **Journal of Radioanalytical and Nuclear Chemistry** *232*, 19-22.

38) S. M. Pimblott and J. A. LaVerne (1998), *On the Radiation Chemical Kinetics of the Precursor to the Hydrated Electron*, **Journal of Physical Chemistry A** *102*, 2967-2975.

39) S. M. Pimblott and J. A. LaVerne (1998), *Effect of Electron Energy on the Radiation Chemistry of Liquid Water*, **Radiation Research** *150*, 159-169.

40) N. Chitose, J. A. LaVerne, et al. (1998), *Effect of Formate Concentration on Radical Formation in the Radiolysis of Aqueous Methyl Viologen Solutions*, **Journal of Physical Chemistry A** *102*, 2087-2090.

41) S. M. Pimblott and J. A. La Verne (1997). *The Effect of Electron Energy on Radiation Damage*. Proceedings of the Twelfth Symposium on Microdosimetry, Oxford, The Royal Society of Chemistry.

42) S. M. Pimblott and J. A. LaVerne (1997), *Stochastic Simulation of the Electron Radiolysis of Water and Aqueous Solutions*, **Journal of Physical Chemistry A** *101*, 5828-5838.

43) J. A. LaVerne, S. M. Pimblott, et al. (1997), *Diffusion-Kinetic Modeling of the Gamma-Radiolysis of Liquid Cycloalkanes*, **Journal of Physical Chemistry A** *101*, 1628-1634.

44) J. A. LaVerne and S. M. Pimblott (1997), *Effect of Elastic Collisions on Energy Deposition by Electrons in Water*, **Journal of Physical Chemistry A** *101*, 4504-4510.

45) L. Wojnarovits and J. A. LaVerne (1996), *Rates of Alkyl Radical-Iodine Scavenging Reactions in Normal and Cycloalkanes*, **Radiation Physics and Chemistry** *47*, 99-101.

46) L. Wojnarovits and J. A. LaVerne (1996), *Iodine as a Radical Scavenger in the Radiolysis of Cyclopentane*, **Radiation Physics and Chemistry** *47*, 361-363.

47) S. M. Pimblott, J. A. LaVerne, et al. (1996), *Monte Carlo Simulation of Range and Energy Deposition by Electrons in Gaseous and Liquid Water*, **Journal of Physical Chemistry** *100*, 8595-8606.

48) S. M. Pimblott, J. A. LaVerne, et al. (1996), *Reconciliation of Transient Absorption and Chemically Scavenged Yields of the Hydrated Electron in Radiolysis*, **Journal of Physical Chemistry** *100*, 9412-9415.

49) J. A. LaVerne and B. Brocklehurst (1996), *Magnetic Field Effects on the Solute Luminescence of Alkane Solutions Irradiated with Heavy Ions*, **Journal of Physical Chemistry** *100*, 1682-1688.

50) J. A. LaVerne (1996), *Development of Radiation Chemistry Studies of Aqueous Solutions with Heavy Ions*, **Nuclear Instruments & Methods in Physics Research Section B- Beam Interactions with Materials and Atoms** *107*, 302-307.

51) J. A. LaVerne and R. H. Schuler (1996), *Radiolysis of the Fricke Dosimeter with Ni^{58} and U^{238} Ions: Response for Particles of High Linear Energy Transfer*, **Journal of Physical Chemistry** *100*, 16034-16040.

52) J. A. LaVerne (1996), *Fluorescence in the Heavy Ion Radiolysis of Benzene*, **Journal of Physical Chemistry** *100*, 18757-18763.

53) J. A. LaVerne, A. Hitachi, et al. (1996), *Scintillation and Ionization in Allene-Doped Liquid Argon Irradiated with O-18 and Ar-36 Ions of 30 MeV/u*, **Physical Review B** *54*, 15724-15729.

54) J. A. LaVerne and B. Brocklehurst (1996), *Magnetic Field Effect on the Luminescence of Alkane Solutions Irradiated with Helium Ions*, **Radiation Physics and Chemistry** *47*, 71-74.

55) J. A. LaVerne and L. Wojnarovits (1996), *Contribution of Excited States in the Heavy Ion Radiolysis of Cyclooctane*, **Radiation Physics and Chemistry** *47*, 353-355.

56) L. Wojnarovits and J. A. LaVerne (1995), *Radical Reactions in the Radiolysis of Cyclopentane*, **Journal of Physical Chemistry** *99*, 3168-3172.

57) L. Wojnarovits and J. A. LaVerne (1995), *Heavy-Ion Radiolysis of Cyclopentane*, **Journal of Physical Chemistry** *99*, 11292-11296.

58) J. A. LaVerne and S. M. Pimblott (1995), *Electron-Energy-Loss Distributions in Solid, Dry DNA*, **Radiation Research** *141*, 208-215.

59) J. A. LaVerne and L. Wojnarovits (1995), *Heavy-Ion Radiolysis of Cyclooctane*, **Journal of Physical Chemistry** *99*, 9862-9868.

60) J. A. LaVerne and S. M. Pimblott (1995), *Electron-Energy-Loss Distributions in Solid and Gaseous Hydrocarbons*, **Journal of Physical Chemistry** *99*, 10540-10548.

61) L. Wojnarovits and J. A. LaVerne (1994), *Radiolysis of Cyclooctane with Gamma-Rays and Helium-Ions*, **Journal of Physical Chemistry** *98*, 8014-8018.

62) S. M. Pimblott and J. A. LaVerne (1994), *Models for the Radiation-Chemistry of Aqueous-Solutions*, **Radiation Protection Dosimetry** *52*, 183-188.

63) S. M. Pimblott and J. A. LaVerne (1994), *Diffusion-Kinetic Theories for LET Effects on the Radiolysis of Water*, **Journal of Physical Chemistry** *98*, 6136-6143.

64) J. A. LaVerne and L. Wojnarovits (1994), *Rates of Alkyl Radical-Radical, Alkyl Radical-Iodine, and Iodine Atom-Atom Reactions in Normal-Alkanes and Cycloalkanes*, **Journal of Physical Chemistry** *98*, 12635-12640.

65) J. A. LaVerne and R. H. Schuler (1994), *Track Effects in Water Radiolysis - Yields of the Fricke Dosimeter for Carbon-Ions with Energies up to 1700 MeV*, **Journal of Physical Chemistry** *98*, 4043-4049.

66) A.Hitachi, J. A. LaVerne, et al. (1994), *Energy Resolution of Allene Doped Liquid Argon Detectors for Ions of Energy 23-34 Mev Amu*, **Nuclear Instruments & Methods in Physics Research Section a- Accelerators Spectrometers Detectors and Associated Equipment** *340*, 546-550.

67) J. A. LaVerne, A. Hitachi, et al. (1993), *Scintillation Response of Liquid Argon for 3-20 MeV He Ions*, **Nuclear Instruments & Methods in Physics Research Section a- Accelerators Spectrometers Detectors and Associated Equipment** *327*, 63-66.

68) J. A. LaVerne and S. M. Pimblott (1993), *Diffusion-Kinetic Modeling of the Electron Radiolysis of Water at Elevated-Temperatures*, **Journal of Physical Chemistry** *97*, 3291-3297.

69) J. A. LaVerne and S. M. Pimblott (1993), *Yields of Hydroxyl Radical and Hydrated Electron Scavenging Reactions in Aqueous-Solutions of Biological Interest*, **Radiation Research** *135*, 16-23.

70) J. A. LaVerne and S. M. Pimblott (1993), *Diffusion-Kinetic Modeling of the Cooperative Effect of Scavengers on the Scavenged Yield of the Hydroxyl Radical*, **Journal of the Chemical Society-Faraday Transactions** *89*, 3527-3532.

71) J. A. LaVerne and H. Yoshida (1993), *Production of the Hydrated Electron in the Radiolysis of Water with Helium-Ions*, **Journal of Physical Chemistry** *97*, 10720-10724.

72) J. A. LaVerne and A. Mozumder (1993), *Concerning Plasmon Excitation in Liquid Water*, **Radiation Research** *133*, 282-288.

73) S. M. Pimblott and J. A. LaVerne (1992), *Scavenger Concentration Dependences of Yields in Radiation- Chemistry*, **Journal of Physical Chemistry** *96*, 746-752.

74) S. M. Pimblott and J. A. LaVerne (1992), *Molecular Product Formation in the Electron Radiolysis of Water*, **Radiation Research** *129*, 265-271.

75) S. M. Pimblott, R. H. Schuler, et al. (1992), *Diffusion Kinetic Calculations of the Effect of Nitrous-Oxide on the Yields of Ionic Species in the Radiation-Chemistry of Water*, **Journal of Physical Chemistry** *96*, 7839-7841.

76) S. M. Pimblott and J. A. LaVerne (1992), *Cooperative Effects of Scavengers on the Scavenged Yield of the Hydrated Electron*, **Journal of Physical Chemistry** *96*, 8904-8909.

77) J. A. LaVerne and A. Mozumder (1992), *Comments on the Simulation of the Passage of Fast Electrons in Water*, **Radiation Research** *129*, 362-364.

78) J. A. LaVerne, R. H. Schuler, et al. (1992), *Intratrack Reactions of Cyclohexyl Radicals in the Heavy-Ion Radiolysis of Cyclohexane*, **Journal of Physical Chemistry** *96*, 2588-2593.

79) J. A. LaVerne and A. Mozumder (1992), *Differential and Integral W-Values for Ionization in Gaseous Water under Electron and Proton Irradiation - Consistency of Inelastic-Collision Cross-Sections*, **Radiation Research** *131*, 1-9.

80) J. A. LaVerne and R. H. Schuler (1992), *Track Effects in the Radiolysis of Water - HO_2. Production by 200-800-MeV Carbon-Ions*, **Journal of Physical Chemistry** *96*, 7376-7378.

81) A.Hitachi, J. A. LaVerne, et al. (1992), *Effect of an Electric-Field on Luminescence Quenching in Liquid Argon*, **Physical Review B** *46*, 540-543.

82) S. M. Pimblott and J. A. LaVerne (1991), *Energy-Loss by Electrons in Gaseous Saturated-Hydrocarbons*, **Journal of Physical Chemistry** *95*, 3907-3914.

83) J. A. LaVerne and S. M. Pimblott (1991), *Scavenger and Time Dependences of Radicals and Molecular Products in the Electron Radiolysis of Water - Examination of Experiments and Models*, **Journal of Physical Chemistry** *95*, 3196-3206.

84) J. A. LaVerne, S. M. Pimblott, et al. (1991), *Use of Dipole Oscillator Strength in the Calculation of the Range of Electrons in Various Gases*, **Radiation Physics and Chemistry** *38*, 75-81.

85) S. M. Pimblott, J. A. LaVerne, et al. (1990), *Structure of Electron Tracks in Water .1. Distribution of Energy Deposition Events*, **Journal of Physical Chemistry** *94*, 488-495.

86) S. M. Pimblott and J. A. LaVerne (1990), *Comparison of Stochastic and Deterministic Methods for Modeling Spur Kinetics*, **Radiation Research** *122*, 12-23.

87) R. H. Schuler and J. A. LaVerne (1989). *Current Status of Radiation Chemical Studies with Heavy Ions*. New Trends and Developments in Radiation Chemistry, Bologna, Italy, International Atomic Energy Agency.

88) J. A. LaVerne (1989), *The Production of OH Radicals in the Radiolysis of Water with ^{4}He Ions*, **Radiation Research** *118*, 201-210.

89) J. A. LaVerne (1989), *Radical and Molecular Yields in the Radiolysis of Water with Carbon-Ions*, **Radiation Physics and Chemistry** *34*, 135-143.

90) J. A. LaVerne (1988), *Detection of Gaseous Products in the Radiolysis of Aqueous- Solutions*, **Journal of Physical Chemistry** *92*, 2808-2809.

91) N. J. B. Green, J. A. LaVerne, et al. (1988), *Differential Track Structure of Electrons in Liquid Water*, **Radiation Physics and Chemistry** *32*, 99-103.

92) J. A. LaVerne and R. H. Schuler (1987), *Track Effects in Radiation-Chemistry - Production of HO_2 in the Radiolysis of Water by High-LET Ni^{58} Ions*, **Journal of Physical Chemistry** *91*, 6560-6563.

93) J. A. LaVerne and R. H. Schuler (1987), *Radiation Chemical Studies with Heavy-Ions - Oxidation of Ferrous Ion in the Fricke Dosimeter*, **Journal of Physical Chemistry** *91*, 5770-5776.

94) J. A. LaVerne and A. Mozumder (1986), *Effect of Phase on the Stopping and Range Distribution of Low-Energy Electrons in Water*, **Journal of Physical Chemistry** *90*, 3242-3247.

95) J. A. LaVerne, R. H. Schuler, et al. (1986), *Track Effects in Radiation-Chemistry - Production of HO_2 within the Track Core in the Heavy-Particle Radiolysis of Water*, **Journal of Physical Chemistry** *90*, 3238-3242.

96) J. A. LaVerne and R. H. Schuler (1986), *Track Effects in Water Radiolysis with High-Energy Heavy-Ions*, **Journal of Physical Chemistry** *90*, 5995-5996.

97) A.Mozumder and J. A. LaVerne (1985), *Range and Range Straggling of Low-Energy Electrons - General- Considerations and Application to N_2, O_2, and H_2O*, **Journal of Physical Chemistry** *89*, 930-936.

98) J. A. LaVerne, W. G. Burns, et al. (1985), *Production of HO_2 within the Track Core in the Heavy Particle Radiolysis of Water*, **Journal of Physical Chemistry** *89*, 242-243.

99) J. A. LaVerne and A. Mozumder (1985), *Range and Range Straggling of Low-Energy Electrons in the Rare-Gases*, **Journal of Physical Chemistry** *89*, 4219-4225.

100) J. A. LaVerne and R. H. Schuler (1985), *Production of HO_2 in the Track of High-Energy Carbon-Ions*, **Journal of Physical Chemistry** *89*, 4171-4173.

101) A.Mozumder and J. A. LaVerne (1984), *Range Straggling of Low-Energy Electrons*, **Journal of Physical Chemistry** *88*, 3926-3927.

102) J. A. LaVerne and A. Mozumder (1984), *Energy-Loss and Thermalization of Low-Energy Electrons*, **Radiation Physics and Chemistry** *23*, 637-660.

103) J. A. LaVerne and R. H. Schuler (1984), *Track Effects in Radiation-Chemistry - Core Processes in Heavy- Particle Tracks as Manifest by the H_2 Yield in Benzene Radiolysis*, **Journal of Physical Chemistry** *88*, 1200-1205.

104) J. A. LaVerne and A. Mozumder (1983), *Penetration of Low-Energy Electrons in Water*, **Radiation Research** *96*, 219-234.

105) J. A. LaVerne and R. H. Schuler (1983), *Decomposition of Water by Very High Linear Energy-Transfer Radiations*, **Journal of Physical Chemistry** *87*, 4564-4565.

106) J. A. LaVerne and G. G. Meisels (1983), *Chemical Effects of Fission Recoils. 4. Temperature Distribution in the Tracks*, **Radiation Physics and Chemistry** *21*, 329-339.

107) J. A. LaVerne and R. H. Schuler (1982), *H_2 Production in the $^7Li^{3+}$ Ion Radiolysis of Benzene*, **Journal of Physical Chemistry** *86*, 2282-2284.

108) J. A. LaVerne, R. H. Schuler, et al. (1981), *Bibliographies on Radiation-Chemistry .1. Studies of the Heavy Particle Radiolysis of Liquids and Aqueous-Solutions*, **Radiation Physics and Chemistry** *17*, 5-20.

109) G. G. Meisels, J. A. LaVerne, et al. (1978), *Chemical Effects of Fission Recoils. 3. Relaxation-Times of Processes Leading to Ethyl Radicals*, **Journal of Physical Chemistry** *82*, 2231-2234.

Book Chapter of Jay A. LaVerne:

J. A. La Verne (2004), *Radiation Chemical Effects of Heavy Ions*, in Charged Particle and Photon Interactions with Matter: Chemical, Physicochemical, and Biological Consequences with Applications, edited by A. Mozumder and Y. Hitano, Marcell-Dekker Inc. chapter 14.

Presentations by Jay A. LaVerne:

"Hydrogen Production in the Radiolysis of Water at Interfaces", Osaka University, Osaka, Japan, October 18, 2004, invited talk.

"Hydrogen Production in the Radiolysis of Water at Interfaces", Waseda University, Tokyo, Japan, invited talk.

"H_2/H_2O_2 Production from Water/Oxide Mixtures", University of Tokyo, Tokyo, Japan, October 13, 2004, invited talk.

“Hydrated Electron Yields in the Radiolysis of Water", Japanese Radiation Chemistry Society Meeting, Sapporo, Japan, October 9, 2004, feature talk.

"Radiolysis of Liquid Pyridine", Institute of Scientific and Industrial Research, Osaka University, Osaka, Japan, October 7, 2004, invited talk.

"Radiolytic Production of H_2 at Interfaces”, Radiation Chemistry Gordon Conference, June 2004, poster.

“Hydrogen Generation in Transuranic Waste Storage Containers” IAEA Workshop on “Advances in Radiation Chemistry of Polymers”, Radiation Laboratory, University of Notre Dame, September 14, 2003, invited talk.

“H_2 Production in the Radiolysis of Water/Oxide Mixtures, International Congress of Radiation Research, Brisbane, Australia, August 19, 2003, invited talk.

“Gas Production from Water on Salts and Oxides” MIS and Core Technology Meeting, Los Alamos National Laboratory, Los Alamos, New Mexico, October 22, 2002, invited talk.

“Thermal Decomposition of Hydrogen Peroxide”, 224^{th} National Meeting of the American Chemical Society, Boston, MA, August 21, 2002, poster.

“Decomposition of Hydrogen Peroxide and Oxide Surfaces”, Gordon Conference on Radiation Chemistry, Waterville, MA, June 26, 2002, poster.

“H_2 Production in the Radiolysis of Water, Annual Meeting of the Radiation Research Society, Reno, NV, April 20, 2002, invited talk.

“Hydrogen Production from Adsorbed Water” MIS and Core Technology Meeting, Los Alamos National Laboratory, Los Alamos, New Mexico, October 24, 2001, invited talk.

“H_2 Production from the Radiolysis of Adsorbed Water”, with Lav Tandon, American Chemical Society National Meeting, Chicago, Illinois, August 28, 2001, poster

“Fundamental Radiation Chemical Techniques” American Chemical Society National Meeting, Chicago, Illinois, August 28, 2001, invited talk

“Hydrogen Production in the Radiolysis of Water”, with S. M. Pimblott, Annual Meeting of the Radiation Research Society, San Juan, Puerto Rico, April 24, 2001, poster.

"Radiation Events from the Spur to the Track: Physics to Radiobiology" Annual Meeting of the Radiation Research Society, San Juan, Puerto Rico, April 23, 2001, invited talk.

"H_2 Production from the Radiolysis of Adsorbed Water", presented by Lav Tandon, 22nd Miller Conference on Radiation Chemistry, Bowness-on-Windermerre, U.K. April 9, 2001, poster

"Hydrogen Production from Adsorbed Water" with Lav Tandon, American Chemical Society National Meeting, Washington D.C. August 20, 2000, poster.

"The Radiolysis of Water with Helium Ions" Gordon Conference on Radiation Chemistry, Plymouth, New Hampshire, June 29, 2000, poster.

"Radiation Chemistry Studies with Heavy Ions", National Institute of Radiation Science, Chiba, Japan, March 22, 2000, invited talk.

"Heavy Ion Radiolysis of Organic Materials", Application of Radiation Towards the 21st Century, Tokyo, Japan, March 12, 2000, invited talk.

"Heavy Ion Radiolysis of Organic Materials", Application of Radiation Towards the 21st Century, Tokyo, Japan, March 12, 2000, invited talk.

"Radical and Molecular Products in Hydrocarbon Radiolysis", Osaka University, Osaka, Japan, March 10, 2000, invited talk.

"Production of Hydrogen in the Heavy Ion Radiolysis of Polymers", EMSP National Workshop, Atlanta, Georgia, April 26, 2000, invited talk.

"The Radiolysis of Water with Helium Ions" Annual Meeting of the Radiation Research Society, Albuquerque, New Mexico, April 30, 2000, invited talk.

"Hydrogen Production in the Radiolysis Polyethylene", presented by Z. Chang, American Chemical Society National Meeting, New Orleans, August 22, 1999, poster.

"Production of Hydrogen Gas in the Heavy-Ion Radiolysis of High-Density Polyethylene", with Z. Chang, American Chemical Society National Meeting, New Orleans, August 22, 1999, poster.

"Fundamental Aspects of Heavy Ion Radiolysis" 11th International Congress of Radiation Research. Dublin, Ireland, Invited, July18-23, 1999, invited talk.

"Spatial Distribution Effects of OH Radical Chemistry in Water", American Chemical Society National Meeting, Anaheim, California, March 21, 1999, invited talk.

"Fundamental Chemical Effects in the Radiolysis of Water", Los Alamos National Laboratory, Los Alamos, New Mexico, December 1, 1998, invited talk.

"Ion Beam Radiation Chemistry of Aqueous Solutions", Japan Atomic Energy Research Institute, Takasaki, Japan, November 18, 1998, invited talk.

"Ion Beam Radiation Chemistry of Aqueous Solutions", 7th University of Tokyo Nuclear Science and Technology Symposium, Tokyo, Japan, November 17, 1998, invited talk.

"Fundamental Radiation Chemical Processes in High LET Particle Tracks", Nuclear Engineering Research Laboratory, University of Tokyo, Tokai-Mura, Japan, November 16, 1998, invited talk.

"Radical Reactions in the Radiolysis of Liquid Benzene", 9th Tihany Symposium on Radiation Chemistry, Tata, Hungary, August 29-September 3, 1998, invited talk.

“Fundamental Radiation Chemical Processes in High LET Particle Tracks”, Radiation Chemistry Gordon Conference, Newport, Rhode Island, July 5-10, 1998, invited talk.

“Radiation of Aqueous Solutions with Ion Beams”, Third TESLA Workshop: Radiation Research with Ion Beams, Belgrade, Yugoslavia, April 5-7, 1998, invited talk.

“Fluorescence in the Heavy Ion Radiolysis of Benzene”, 45th Annual Meeting of Radiation Research Society, Providence, Rhode Island, May 3-7, 1997, invited talk.

“Track Effects on the Production of OH Radicals in the Radiolysis of Water”, 20 th Miller Conference on Radiation Chemistry, Bowness-on-Windermere, England, March 22-27, 1997, invited talk.

“Radiation Chemistry Studies with Heavy Ions”, Physical Chemistry Division of the Department of Chemistry and Biochemistry, University of Notre Dame, Notre Dame, IN, January 30, 1997, invited talk.

“Track Effects in Water Radiolysis with High-Energy Heavy Ions: Irradiation of the Fricke Dosimeter”, Japan Atomic Industry Forum (JAIF), Tokyo, October 23, 1996, invited talk.

“Radiation Chemistry Studies with Heavy Ions”, The Institute of Physical and Chemical Research (RIKEN), Saitama, October 22, 1996, invited talk.

“Radiation Chemistry Studies with Highly Charged Particles: Excited States in Benzene”, The Institute of Scientific and Industrial Research, Osaka University, Osaka, October 19, 1996, invited talk.

“Radiolysis of the Fricke Dosimeter with Very High LET ^{58}Ni and ^{238}U Ions”, Annual Meeting of the Japanese Radiation Chemical Society, Tsukuba, October 17, 1996, invited talk.

“Radicals and Excited States in the Heavy Ion Radiolysis of Liquid Hydrocarbons”, Japan Atomic Energy Research Institute (JAERI), Takasaki, October 11, 1996, invited talk.

“Effects of Ion Beams in Water, Track Structure Model”, Japan Atomic Energy Research Institute (JAERI), Takasaki, October 11, 1996, invited talk.

“Radicals and Excited States in the Heavy Ion Radiolysis of Liquid Hydrocarbons”, Graduate School of Engineering, Hokkaido University, Saporro, October 8, 1996, invited talk.

“Radiation Chemistry Studies with Highly Charged Particles: Excited States in Benzene”, Advanced Research Center for Science and Engineering, Waseda University, Tokyo, October 3, 1996, invited talk.

“Production of OH Radicals in the Heavy Ion Radiolysis of Water”, 44th Annual Meeting of Radiation Research Society, Chicago, Illinois, April 14-17, 1996, invited talk.

"Radiolysis of Water", Los Alamos National Laboratory, Los Alamos, New Mexico, January 25, 1996, invited talk.

"Status of Radiation Chemistry with Heavy Ions", Third International Symposium on Swift Heavy Ions in Matter, SHIM-95, Caen, France, May 15-19, 1995, invited talk.

"Heavy Ion Radiolysis of the Fricke Dosimeter", Chalk River National Laboratory, Chalk River, Ontario, Canada, November 18, 1994, invited talk.

"Contribution of Excited States in the Heavy Ion Radiolysis of Cyclooctane", 8th. Tihany Symposium on Radiation Chemistry, Balatonszéplak, Hungary, August 22-26, 1994, invited talk.

"Refresher Course: Status of Heavy Ion Radiation Chemical Studies", 42nd Annual Meeting of Radiation Research Society, Nashville, Tennessee, April 30 - May 4, 1994, invited talk.

"Track Structure: Relationship Between Experiment and Theory", 41st Annual Meeting of Radiation Research Society, Dallas, Texas, March 20-25, 1993, poster.

"Application of Radiation Chemical Models to Systems of Biological Interest", Pathways to Radiation Damage in DNA, Oakland University, June 14-18, 1992, invited talk.

"Radiation Chemistry Studies with Heavy Ions", Department of Physics, University of Notre Dame, March 25, 1991, invited talk.

"Radiation Chemistry with Heavy Ions", Department of Physics, University of Chile, December 13, 1990, invited talk.

"The Radiolysis of Cyclohexane with ^{4}He Ions", 7th. Tihany Symposium on Radiation Chemistry, Balatonszéplak, Hungary, September 9-14, 1990, invited talk.

"Charged Particle Tracks Effects in Radiation Chemistry", symposium on Energy Transfer in Condensed Systems, 37th Annual Meeting of Radiation Research Society, Seattle, Washington, March 19-23, 1989, invited talk.

"Track Effects in Heavy Particle Radiolysis", Gordon Conference on Radiation Chemistry, Newport, Rhode Island, July 10-15, 1988, invited talk.

"The Production of OH Radicals in the Radiolysis of Water With ^{4}He Ions", 36th Annual Meeting of Radiation Research Society, Philadelphia, Pennsylvania, April 16-21, 1988, poster.

"An Overview of the Oxidation of Ferrous Ions in the Fricke Dosimeter by Heavy Ions", Eighth International Congress of Radiation Research, Edinburgh, Scotland, July 19-24, 1987, invited talk.

"Production of HO_2 in the Radiolysis of Water With Heavy Ions", Third Workshop on Heavy Charged Particles in Biology and Medicine, Darmstadt, West Germany, July 13-15, 1987, invited talk.

"Theory of Range and Range Straggling of Low-Energy Electrons", Miller Conference, Winderemere, England, April 15-19, 1985, invited talk.

"Radiation Chemistry Studies of Track Effects With ^{7}Li, ^{9}Be, ^{11}B, and ^{12}C Ions", Gordon Conference on Radiation Chemistry, Wolfeboro, New Hampshire, June 24-29, 1984, invited talk.