

Curriculum Vitae

BRADLEY RAY ARNOLD

Personal Data:

Date of Birth: 20-08-60
Place of Birth: Rochester, New York, USA.

Education:

Ph.D. in Chemistry University of Utah, Salt Lake City, Utah
Mentor: Josef Michl
Dissertation Title: "Spectroscopy of Matrix Isolated Cyclobutadiene and 1,3-Butadiene"

B. Sc. H. Chem. Dalhousie University, Halifax, Nova Scotia, Canada
Honours in Chemistry

Experience:

2001-present University of Maryland, Baltimore County, Baltimore, Maryland.
Associate Professor, Physical Chemistry.

1995 - 2001 University of Maryland, Baltimore County, Baltimore, Maryland.
Assistant Professor, Physical Chemistry.

1993-1995 Center for Photoinduced Charge-Transfer, Rochester, New York,
Research Associate.

1990-1993 National Research Council of Canada, Ottawa, Canada.
Research Associate.

Professional Activities:

Appointed or Elected Offices:

Inter-American Photochemistry Society Advisory Council
Editorial Board Member of Spectroscopy Letters

Referee Duties: Journal of the American Chemical Society
Journal of Physical Chemistry
Journal of Physical Organic Chemistry
Photochemistry and Photobiology

Memberships: American Chemical Society, Physical Division
Inter-American Photochemical Society
American Society for Photobiology

Publications:**Articles in Refereed Journals**

1. Loutfy, R.O., Arnold, B.R.; "Effect of Viscosity and Temperature on Torsional Relaxation of Molecular Rotors" *J. Phys. Chem.* **1982**, *86*, 4205.
2. Arnold, B.R., Donald, L., Jurgens, A., Pincock, J.A.; "Homolytic Versus Heterolytic Cleavage for the Photochemistry of 1-Naphthylmethyl Derivatives" *Can. J. Chem.* **1985**, *63*, 3140.
3. Orendt, A.M., Arnold, B.R., Radziszewski, J.G., Facelli, J.C., Malsch, K.D., Stub, H., Grant, D.M., Michl, J.; "¹³C NMR and Polarized IR Spectra of Vicinally Labeled [¹³C₂] Cyclobutadiene in Ar Matrix: Interconversion of Valence Tautomers" *J. Am. Chem. Soc.* **1988**, *110*, 2648.
4. Arnold, B.R., Balaji, V., Michl, J.; "Structure of Matrix-Isolated *s-cis*-1,3-Butadiene from Polarized IR Spectra: A Closer Look" *J. Am. Chem. Soc.* **1990**, *112*, 1808.
5. Arnold, B.R., Radziszewski, J.G., Champion, A., Perry, S.S., Michl, J.; "Raman Spectrum of Matrix-Isolated Cyclobutadiene. Evidence for Environmental Hinderance to Heavy-Atom Tunneling?" *J. Am. Chem. Soc.* **1991**, *113*, 692.
6. Arnold, B.R., Balaji, V., Downing, J.W., Radziszewski, J.G., Fisher, J.J., Michl, J.; "IR Polarization Directions in *s-trans*-1,3-Butadiene and the Average Topochemistry of the *s-Cis* to *s-Trans* Photoisomerization in Matrix Isolation" *J. Am. Chem. Soc.* **1991**, *113*, 2910.
7. Arnold, B.R., Scaiano, J.C.; "Laser ablation of Doped Polymers: Transient Phenomena as the Ablation Threshold is Approached" *Macromolecules* **1992**, *25*, 1582.
8. Arnold, B.R., Scaiano, J.C., McGimpsey, W.G.; "Electron Transfer Quenching of Excited Diphenylmethyl Radical" *J. Am. Chem. Soc.* **1992**, *114*, 9978.
9. Arnold, B.R., Scaiano, J.C., Bucher, G.F., Sander, W.W.; "Laser Flash Photolysis Studies on 4-Oxo-cyclohexa-2,5-dienylidenes" *J. Org Chem.* **1992**, *57*, 6469.
10. Arnold, B.R., Brown, C. E., Luszyk, J.; "Solution Photochemistry of 2H-Pyran-2-one: Laser Flash Photolysis with Infrared Detection of Transients" *J. Am. Chem. Soc.* **1993**, *115*, 1576.

11. Ha, C., Horner, J.H., Newcomb, M., Varick, T.R., Arnold, B.R., Luszyk, J.; "Kinetic Studies of the Cyclization of the 6,6-Diphenyl-5-hexenyl Radical. A Test of the Accuracy of the Rate Constants for Reactions of Hydrogen Atom Transfer" *J. Org. Chem.* **1993**, *58*, 1194.
12. Arnold, B.R., Michl, J.; "Ultraviolet and Polarized Infrared Spectroscopy of Matrix-Isolated Cyclobutadiene and Its Isotopomers" *J. Phys. Chem.* **1993**, *97*, 13348.
13. Scaiano, J.C., Arnold, B.R., McGimpsey, W.G.; "Two-Laser, Two-Color Photochemistry from Upper Triplet States of 2-Bromonaphthalene and 9-Bromophenanthrene in Benzene" *J. Phys. Chem.* **1994**, *98*, 5431.
14. Arnold, B.R., Noukakis, D., Farid, S., Goodman, J.L., Gould, I.R.; "Dynamics of Interconversion of Contact and Solvent-Separated Radical-Ion Pairs" *J. Am. Chem. Soc.* **1995**, *117*, 4399.
15. Arnold, B.R., Farid, S., Goodman, J.L., Gould, I.R.; "Absolute Energies of Interconverting Contact and Solvent-Separated Radical-Ion Pairs" *J. Am. Chem. Soc.* **1996**, *118*, 5482.
16. Arnold, B.R., Atherton S.J., Farid, S., Goodman, J.L., Gould, I.R.; "Combined Application of Picosecond Transient Absorption and Emission Measurements in Studies of Radical-Ion Pair Dynamics" *Photochem. Photobiol.* **1997**, *65*, 15.
17. Wagner, B.D., Arnold, B.R., Brown, G.S., Luszyk, J.; "Spectroscopy and Absolute Reactivity of Ketenes in Acetonitrile Studied by Laser Flash Photolysis with Time-Resolved Infrared Detection" *J. Am. Chem. Soc.* **1998**, *120*, 1827-1834.
18. Zaini, R.Y., Orcutt, A.C., Arnold, B.R.; "Determination of Equilibrium Constants for Weakly Bound Charge-Transfer Complexes" *Photochem. Photobiol.* **1999**, *69*, 443-447.
19. Arnold, B.R., Euler, A.C., Jenkins, A.L., Uy, O.M., Murray, G.M.; "Progress in the Development of Molecularly Imprinted Polymer Sensors" *Johns Hopkins APL Tech. Digest*, **1999**, *20*, 190-198.
20. Poliakov, P.V., Arnold, B.R.; "An Application of Time-Resolved Linear Dichroism Spectroscopy: The Excited Singlet State of 1,2:5,6-Dibenzanthracene" *Spec. Lett.* **1999**, *32*, 747-762.

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21. Arnold, B.R., Zaini, R., Euler, A.; "Analysis of Charge-Transfer Complex Absorption Spectra and the Applicability of the Mulliken Two-State Model" *Spec. Lett.* **2000**, *33*, 595-614.
22. Arnold, B.R., Euler, A., Fields, K., Zaini, R.; "Association Constants for 1,2,4,5-Tetracyanobenzene and Tetracyanoethylene with Methyl Substituted Benzenes" *J. Phys. Org. Chem.* **2000**, *13*, 729-734.
23. Murray, G.M., Arnold, B.R., Kelly, C.A., Uy, O.M.; "Imprinted Polymer Sensors for Contamination Detection" *Proc. SPIE – Int. Soc. Opt. Eng.*, **2001**, *4206*, 131.
24. Arnold, B.R., Schill, A., Poliakov, P.V.; "Application of Time-Resolved Linear Dichroism Spectroscopy: Relaxation of Excited Hexamethylbenzene/1,2,4,5-Tetracyanobenzene Charge-Transfer Complex" *J. Phys. Chem. A* **2001**, *105*, 537-543.
25. Arnold, B.R., Euler, A.C., Schill, A.W., Poliakov, P.V.; "Application of Time-Resolved Linear Dichroism Spectroscopy: Rapid Relaxation of Excited Charge-Transfer Complexes" *J. Phys. Chem. A* **2001**, *105*, 10404-10412.
26. Arnold, B.R., Schill, A.W.; "Rotational Dynamics of Excited Probes: The Analysis of Experimental Data" *Spec. Lett.* **2002**, *35*, 229-238.
27. Levy, D., Arnold, B.R.; "Application of Time-Resolved Linear Dichroism Spectroscopy: Intensity Borrowing in Charge Transfer Complex Absorption Spectra" *Can. J. Chem.* **2003**, *81*, 567-574.
28. Bae, S.Y., Arnold, B.R.; "Characterization of Solvatochromic Probes: Simulation of Merocyanine 540 Absorption Spectra in Binary Solvent Mixtures and Pure Solvent Systems" *J. Phys. Org. Chem.* **2004**, *17*, 187-193.
29. Levy, D., Arnold, B.R.; "The Nature of the Rapid Relaxation of Excited Charge-Transfer Complexes" *J. Am. Chem. Soc.* **2004**, *126*, 10727-10731.
30. Levy, D., Arnold, B.R.; "Influence of Localized Excited States on the Transition Moment Direction of Charge-Transfer Complex Absorptions" *J. Phys. Chem. A* **2005**, *109*, 2113-2119.
31. Levy, D., Arnold, B.R.; "Analysis of Charge-Transfer Absorption and Emission Spectra on an Absolute Scale: Evaluation of Free Energies, Matrix Elements, and Reorganization Energies" *J. Phys. Chem. A* **2005**, *109*, 8572-8578.

32. Arnold, B.R., Levy, D., Lu, X.; "Rotational Dynamics of Excited Probes: Testing Hydrodynamic Theories Using Time-Resolved Linear Dichroism Data" *Spec. Lett.* **2007**, *40*, 149-164.
33. Schill, Alexander W.; Arnold, Bradley R.; Kelly, Lisa A.; Pellegrino, Paul M., "Standoff detection using coherent backscattered spectroscopy," *SPIE Proceedings*, **2007**, 6554.

Book Chapters and Review Articles

1. Arnold, B.R., Michl, J.; "Spectroscopy of Cyclobutadiene", in *Kinetics and Spectroscopy of Carbenes and Biradicals*, M. Platz, Ed., Plenum: New York, N. Y., 1990.
2. Arnold, B.R., Scaiano, J.C.; "Reactions of Excited Free Radicals in Solution" in *Landolt-Bernstein Numerical Data and Functional Relationships in Science and Technology*, H. Ficscher, Ed., Springer-Verlag: New York, N. Y., 1998.
3. Arnold, B.R., Zaini, R., Orcutt, A.C., "Determination of Equilibrium Constants for Weakly Bound Charge Transfer Complexes", *IAPS Newsletter*, **1998**, *21(2)*, 18-24.
4. Arnold, B.R.; review of *Advances in Photochemistry*, vol. 23., *Photochem. Photobiol.* **1998**, *68*, 133.
5. Arnold, B.R., Levy, D., McKim, W.D.; "Association Constants of Weakly Bound Charge Transfer Complexes" *The Spectrum*, **2003**, *16*, 8-11.