

## Curriculum Vitae

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#### Professional Experience:

Postdoctoral Research Fellow California Institute of Technology Advisor: Ahmed H. Zewail	January 1984 - July 1986
Assistant Professor of Chemistry Wesleyan University	August 1986 - June 1993
Associate Professor of Chemistry Wesleyan University	July 1993 - June 1999
Professor of Chemistry Wesleyan University	July 1999- Present
Dean Natural Sciences and Mathematics	July 2015 - Present

#### Education:

B.A., Chemistry State University of New York at Binghamton	June 1979
Ph.D., Physical Chemistry State University of New York at Stony Brook Advisor: Phillip M. Johnson	December 1983

#### Publications Prior to Wesleyan:

1. The  ${}^1B_{2u} \leftarrow \leftarrow {}^1A_{1g}$  Two-photon Spectra of Several Isotopes of Benzene by Supersonic Beam Multiphoton Ionization Spectroscopy, A. Sur, J. L. Knee and P. M. Johnson, *J. Chem. Phys.*, **77**, 645 (1982).
2. *Photochemistry of Benzene and Oxygen in Supersonic Cluster Beams*, J. L. Knee, C. E. Otis and P. M. Johnson, *J. Phys. Chem.*, **88**, 4467 (1982).
3. *The Identification of Channel Three in Isolated Benzene*, C. E. Otis, J. L. Knee and P. M. Johnson, *J. Chem. Phys.*, **78**, 2091 (1983).
4. *Nonradiative Processes in the Channel Three Region of the  $S_1$  State of Ultracold Benzene*, C. E. Otis, J. L. Knee and P. M. Johnson, *J. Phys. Chem.*, **12**, 2232 (1983).

5. *Triplet State Non-radiative Lifetimes of Collision free Aniline and Aniline-Ar Complexes Above the S<sub>1</sub> Origin*, J. L. Knee and P. M. Johnson, *J. Chem. Phys.*, **80**, 13 (1984).
6. *Nonradiative Transitions in Collisionless Perdeuterobenzene*, J. L. Knee, C. E. Otis and P. M. Johnson, *J. Chem. Phys.*, **81**, 4455 (1984).
7. *Intramolecular Dephasing in Pyrazine: Direct Picosecond Time Resolution*, J. L. Knee, F.E. Doany and A. H. Zewail, *J. Chem. Phys.*, **82**, 1042 (1985).
8. *Lifetimes of Dissociation-relaxed Triplet States of Pyrazine and Pyrimidine*, J. L. Knee and P. M. Johnson, *J. Phys. Chem.*, **89**, 948 (1985).
9. *Picosecond Mass Spectrometry of a Collisionless Photodissociation Reaction*, J. L. Knee, L. R. Khundkar and A. H. Zewail, *J. Chem. Phys.*, **82**, 4715 (1985).
10. *IVR in Isolated Molecules with Nearby Electronic States*, J. L. Knee, L. R. Khundkar and A. H. Zewail, *J. Phys. Chem.*, **89**, 3201 (1985).
11. *Picosecond Monitoring of Chemical Reactions in Molecular Beams: Photofragmentation of R-I → R<sup>z</sup> + I*, J. L. Knee, L. R. Khundkar and A. H. Zewail, *J. Chem. Phys.*, **83**, 1996 (1985).
12. *Picosecond Photofragmentation of Tri- and Tetraatomic Molecules: Measurement of "State-to-State" Reaction Rates*, J. L. Knee, L. R. Khundkar and A. H. Zewail, *J. Phys. Chem.*, **88**, 4659 (1985).
13. *Femtosecond Photofragment Spectroscopy: The Reaction ICN → I + CN*, N. F. Scherer, J. L. Knee and A. H. Zewail, *J. Phys. Chem.*, **89**, 5141 (1985).
14. *Picosecond Photofragment Spectroscopy: I. Microcanonical State-to-State Rates of the Phys.*, **87**, 77 (1987).
15. *Picosecond Photofragment Spectroscopy: III. Vibrational Predissociation of van der Waals' Clusters*, J. L. Knee, L. R. Khundkar and A. H. Zewail, *J. Chem. Phys.*, **87**, 115 (1987).

#### **Publications at Wesleyan:**

16. *Luminescence Spectra and Lifetimes of Cerium(III) Compounds as Indicators of Solution Behavior and Radiative Efficiency*, P. N. Hazin, C. Lakshminarayan, L.S. Brinen, J.L. Knee, J.W. Bruno, William E. Streib and Kirsten Folting, *Inorg. Chem.*, **27**, 1393 (1988).
17. *Ultrafast Laser Spectroscopy of Chemical Reactions*, J. L. Knee and Ahmed H. Zewail, *Spectroscopy*, **3**, 44 (1988).
18. *Ultrashort Laser Pulse Chemistry and Spectroscopy*, J. L. Knee, *Encyclopedia of Physical Science and Technology, 1990 Yearbook*, Academic Press.
19. *Spectroscopy and Dynamics of the S<sub>1</sub> State of Jet-Cooled 1-Naphthol*, C. Lakshminarayan and J.L. Knee, *J. Phys. Chem.*, **94**, 2639 (1990).
20. *Picosecond measurements of vibrational dynamics using pump-probe laser photoelectron spectroscopy*, *J. Chem. Phys.*, J.M. Smith, C. Lakshminarayan and J. L. Knee, **93**, 4475 (1990).

21. *Laser photoelectron spectroscopy of 1- and 2-naphthol: relative stability of the cis and trans cation rotamers*, Chem. Phys. Lett., C. Lakshminarayan, J.M. Smith and J.L. Knee, **182**, 656 (1991).
22. *High resolution threshold photoelectron spectroscopy of aniline and aniline van der Waals complexes*, X. Zhang, J.M. Smith and J.L. Knee, *J. Chem. Phys.*, **97**, 2843 (1992).
23. *Analysis of the torsional potential of 9,10-dihydrophenanthrene in three electronic states:  $S_0$ ,  $S_1$  and cation ground state*, J. M. Smith and J.L. Knee, *J. Chem. Phys.*, **99**, 38 (1993).
24. *Electronic spectroscopy of four conformations of Jet-Cooled 1,6-Dihydroxynaphthalene*, J.M. Smith, Xu Zhang, A. Thompson, C. Lakshminarayan and J.L. Knee, *J. Phys. Chem.*, **97**, 3990 (1993).
25. *Zero electron kinetic energy photoelectron spectroscopy using picosecond lasers*, J.M. Smith, X. Zhang and J.L. Knee, Proc. Soc. Photo-Opt. Instrum. Engrs., **1858**, 217 (1993).
26. *Dynamics of high  $n$  molecular Rydberg states with application to mass analysed threshold ionization spectroscopy*, X. Zhang, J.M. Smith and J.L. Knee, *J. Chem. Phys.*, **99**, 3133 (1993).
27. *Aniline- $CH_4$   $S_1$  vibrational dynamics studied with picosecond photoelectron spectroscopy*, J. M. Smith, X. Zhang and J.L. Knee, *J. Chem. Phys.*, **99**, 2550 (1993).
28. *Picosecond vibrational dynamics of several  $S_1$  bands in jet-cooled  $p$ -difluorobenzene*, X. Zhang, J. M. Smith and J.L. Knee, *J. Chem. Phys.*, **100**, 2429, (1994).
29. *Threshold Ionization Spectroscopy of the Low Frequency Vibrational Modes of the Styrene and trans-Stilbene Cations*, J. M. Smith and J.L. Knee, *Laser Chem.*, **14**, 2550 (1994).
30. *Dynamics of large molecule van der Waals complexes studied with ZEKE spectroscopy*, X. Zhang and J.L. Knee, *Faraday Discussion of Chem. Soc.*, **97**, 299 (1994).
31. *IVR and Electronic Relaxation in the Channel Three Region of Benzene*, J.M. Smith, Xu Zhang and J.L. Knee, *J. Phys. Chem.*, **102**, 1768 (1995).
32. *Time Resolved Threshold Ionization Spectroscopy*, J. L. Knee, Chapter in "Femtosecond Chemistry", eds. J. Manz and L. Woste, VCH, Weinheim, 1995.
33. *ZEKE Studies with picosecond lasers*, J L. Knee, Chapter in "Highly resolved laser photoionization and photoelectron studies" Current Topics in Ion Chemistry and Physics, eds. T. Baer, C. Ng and I. Povic ( Wiley, New York) 1995.
34. *Photoelectron Spectroscopy of Molecular Clusters*, X. Zhang, J. Pitts, C. Zheng and J. L. Knee, in Laser Techniques for State-Selected and State-to-State Chemistry III, John W. Hepburn, Editor, Proc. SPIE 2548, 84 (1995).
35. *Neutral and Cation Spectroscopy of Fluorene- $Ar_n$  Clusters*, X. Zhang, J. Pitts, and J.L. Knee, *J. Chem. Phys.*, **107**, 8239 (1997).
36. *Dynamics of Vibronically Excited Fluorene- $Ar_n$  ( $n=4-5$ ) Clusters*, Jonathan D. Pitts and J.L. Knee, *J. Chem. Phys.*, **108**, 9632 (1998).
37. *Electronic Spectroscopy and Dynamics of the Monomer and  $Ar_n$  Clusters of 9-Phenylfluorene*, Jonathan D. Pitts and J.L. Knee, *J. Chem. Phys.*, **109**, 7113, (1998).

39. *Conformational Energy and Dynamics of 9-Ethylfluorene*, Jonathan D. Pitts, S. Wategaonkar and J.L. Knee, *J. Chem. Phys.*, **110**, 3378 (1999).
40. *Structure and Dynamics of 9-Ethylfluorene-Ar<sub>n</sub> van der Waals Complexes*, Jonathan D. Pitts and J.L. Knee, *J. Chem. Phys.*, **110**, 3389 (1998).
41. *3-Ethylindole Electronic Spectroscopy: S<sub>1</sub> and Cation Torsional Potential Surfaces*. Jonathan D. Pitts, Swarna Basu and J.L. Knee, *J. Chem. Phys.*, **113**, 1857 (2000).
42. *Conformational Studies of the Neutral and Cation of Several Substituted Fluorenes*, Swarna Basu and J.L. Knee, *J. Elect. Spect. And Related Phenomena*, **112**, 209 (2000).
43. *Conformational Analysis and Dynamics of 9-Propylfluorene and 9-Ethylfluorene*, Swarna Basu and J.L. Knee, *J. Phys. Chem.*, A **105**, 5842 (2001).
44. *The Molecular Structure and Conformation of Cyclopropylbenzene as Determined by Ab Initio Molecular Orbital Calculations, Pulsed-Jet Fourier Transform Microwave Spectroscopic and Gas-Phase Electron Diffraction Investigations*, Shen, Q., Wells, C. Traetteberg, M., Bohn, R.K., Willis, A., and Knee, J., *J. Org. Chem.*, **66**, 5840-5845 (2001).
45. *Vibrational Dynamics of 9-Fluorene-methanol Using Infrared-Ultraviolet Double Resonance Spectroscopy*, Swarna Basu and J.L. Knee, *J. Chem. Phys.*, **120**, 5631 (2004).
46. *Tryptophol Cation Conformations studied with ZEKE Spectroscopy*, Quanli Gu, Swarna Basu and J. L. Knee, *J. Phys. Chem. A.*, **111**, 808 (2007).
47. *Binding energies and dissociation pathways in the Aniline-Ar<sub>2</sub> cation complex*, Quanli Gu, and J. L. Knee, *J. Chem. Phys.*, **128**, 064311/1-064311/8 (2008).
48. *Two-color photoexcitation of Rydberg states via an electric quadrupole transition*. Leping Li; Quanli Gu; J.L. Knee; J.D. Wright; J.M. DiSciaccia; T.J. Morgan *Journal of the Optical Society of America B: Optical Physics*, **25**, 334 (2008).
49. *Characterization of the Dynamics of an Essential Helix in the UIA Protein By Time-Resolved Fluorescence Measurements*, Divina Anunciado, Michael Agumeh, Bethany L. Kormos, David L. Beveridge, J. L. Knee, and Anne M. Baranger, *J. Phys. Chem. B*, **112** (19), 6122 -6130, (2008).
50. *Photoionization spectroscopy of even-parity autoionizing Rydberg states of argon: Experimental and theoretical investigation of Fano profiles and resonance widths*, D. Wright, T. Morgan, Leping Li, Quanli Gu, J. L. Knee, I. D. Petrov, V. L. Sukhorukov and H. Hotop, *Phys. Rev. A* **77**, 062512 (2008).
51. *Cation Spectroscopy and Binding Energy Determination for 1,4-benzodioxan -Ar<sub>1</sub> and -Ar<sub>2</sub> Complexes*, Quanli Gu and J.L. Knee, *J. Phys. Chem. A*, **112** (30), 6823–6828, (2008).
52. *Characterization of two adenosine analogs as fluorescence probes in RNA*, Ying Zhao, Joseph L. Knee, Anne M. Baranger, *Bioorganic Chemistry*, **36**, 271 (2008).
53. *Communication: Spectroscopic measurement of the binding energy of a carboxylic acid-water dimer*, Quanli Gu and J. L. Knee, *J. Chem. Phys.* **136**, 171101 (2012); doi: 10.1063/1.4711862

54. *Applying 6-Methylisoxanthopterin-Enhanced Fluorescence To Examine Protein–DNA Interactions in the Picomolar Range*, Andrew Moreno, Joseph Knee, Ishita Mukerji, *Biochemistry*, 51, 6847 (2012), DOI: 10.1021/bi300466d
55. *Zero kinetic energy photoelectron spectroscopy of tryptamine and the dissociation pathway of the singly hydrated cation cluster*, Quanli Gu and J. L. Knee, *J. Chem. Phys.*, **137**, 104312 (2012); doi: 10.1063/1.4752080.
56. *Communication: Frequency shifts of an intramolecular hydrogen bond as a measure of intermolecular hydrogen bond strengths*, Quanli Gu, Carl Trindle and J. L. Knee, *J. Chem. Phys.*, **137**, 091101 (2012).
57. *HU Induced Perturbation to the Structure and Dynamics of Flexible DNA*, A.T. Moreno, I. Mukerji and J. L. Knee *Biophysical Journal* 104(2) 422A (2013); doi: 10.1063/1.4825381.
58. *Communication: The ionization spectroscopy of mixed carboxylic acid dimers*, Zhijun Yang, Quanli Gu, Carl O. Trindle, and J. L. Knee *J. Chem. Phys.* 139, 151101 (2013); doi:10.1016/j.bpj.2012.11.2349
59. *Electronic and Cationic Spectroscopy of 9-Hydroxy-9-fluorene Carboxylic Acid*, Zhijun Yang, Quanli Gu, Carl O. Trindle, and J. L. Knee *The Journal of Physical Chemistry A* 118 (27), 4982 (2014).
60. *Influences of the propyl group on the van der Waals structures of 4-Propylaniline complexes with one and two argon atoms studied by electronic and cationic spectroscopy*, Zhijun Yang, Quanli Gu, Carl Trindle, and Joseph Knee, *J. Chem. Phys.* 143, 034308 (2015)
61. *Communication: Physical origins of ionization potential shifts in mixed carboxylic acids and water complexes*, Quanli Gu, Zhen Tang, Peifeng Su, Wei Wu, Zhijun Yang, Carl Trindle, and Joseph Knee, *J. Chem. Phys.* 145, 051101 (2016)

### **Graduate Thesis Supervision:**

Caitlin Bray, MA.

December, 2015

*Gas Phase Spectroscopy of 4-aminophenethyl Alcohol and Clusters with Carboxylic Acids*

Andrew Moreno, Ph.D.

May, 2014

*The photophysical characterization of the guanine analogue 6-methylisoxanthopterin in DNA oligomers and its application to probing DNA-Protein interactions*

Quanli Gu, Ph.D.

May, 2009

*Spectroscopy and Dynamics of Molecular Clusters: van der Waals Complexes to Hydrogen Bonded Systems*

Swarna Basu, Ph.D. <i>Conformational Dynamics, Energy Redistribution and Cluster Dissociation in Substituted Aromatic Molecules.</i>	March, 2002
Jonathan D. Pitts <i>Time resolved Photoelectron Studies of Molecular and Cluster Conformational Dynamics</i>	December, 1998
Chaowen Zheng, MA <i>Mass Analyzed Threshold Ionization Spectroscopy of Fluorene and Fluorene-Ar Clusters</i>	August, 1995
Xu Zhang, Ph.D. <i>Spectroscopy and Dynamics of van der Waals Complexes Studied with Zero Electron Kinetic Energy Photoelectron Spectroscopy</i>	April, 1995
Jonathan M. Smith, Ph.D. <i>Zero Electron Kinetic Energy Photoelectron Spectroscopy as a Probe of Molecular Dynamics and Conformation</i>	March, 1993
Chitra Lakshminarayan, Ph. D. <i>Spectroscopy and Dynamics in the Excited States of 1-Naphthol and Acenaphthene</i>	July, 1991
<b>Undergraduate Thesis Supervision:</b>	
Jason Paisley, BS	May, 2004
Michael Agumeth, BS	May, 2006
David Snyderacker, BS	May, 2009
Eric Boon, BS	May, 2010
Thomas Kuntz, BS	May, 2012