

Matthew F. Tuchler
Associate Professor of Chemistry

EMPLOYER: Department of Chemistry, Washington and Lee University, Lexington, VA 24450
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EDUCATION:

B.A. in Chemistry, Haverford College, 1986
M.A. in Chemistry, University of Chicago, 1989
Ph.D. in Physical Chemistry, University of Illinois at Urbana, 1995

PROFESSIONAL POSITIONS:

Postdoctoral Research with Professor Curt Wittig, University of Southern California.(1995-1998)
Assistant Professor of Chemistry, Washington and Lee University, 1998- current

AWARDS AND FELLOWSHIPS:

Phi Beta Kappa Society, 1986
American Chemical Society (Philadelphia Chapter) Academic Achievement Award, 1986
Outstanding Teacher, Freshman Chemistry, University of Illinois, 1989
University of Illinois Graduate Fellow (1990-1993)

PUBLICATIONS AND INVITED LECTURES

“Effects of Laser Lineshape on Optical Determination of Equilibrium Constants Using CRDS”, Gordon Research Conference on Atmospheric Chemistry, September 4-9, 2005, Big Sky, Montana

“Fundamentals of Quantum Chemistry by James House (2nd edition)” Book Review for J. Chem. Ed., 82 (2005) 1002.

“CRDS Approach to Gas Phase Equilibrium Constants: The Case of $N_2O_4 \leftrightarrow 2NO_2$ at 283 K.”(Tuchler, M; Schmidt, K.L.; Morgan, M.M.; Chem. Phys Lett. 401(2005) 393-398)

“Using Radial Probability Distributions and Effective Charge Fields to Understand Fourth Row Configuration and Ionization Behavior: The Case of Sc”, (in process).

“Quantum Mechanics: A Conceptual Approach by Hendrick Hamerka” Book Review for J. Chem Ed., 81 (2004).

“Using Cavity Ringdown Spectroscopy to Measure Equilibrium Constants: The Case of $NO_2 \leftrightarrow N_2O_4$ at 283 K.”, Sci. Mix Session, American Chemical Society Meeting, Anaheim, CA. 03/04.

“A CRAS Approach to Equilibrium Constants: The Case of NO_2 and N_2O_4 ”, Gordon Research Conference on Atmospheric Chemistry, September, 2003, Big Sky, Montana

“A CRAS Approach to Equilibrium”, presented to the Department of Chemistry, The College of the Holy Cross, 12/18/02.

“Reaction Dynamics of Small Molecules: The Devil is in the Details”, presented to the Department of Chemistry, Virginia Polytechnic Institute, 03/10/00.

“Photoinitiated H₂CO Unimolecular Decomposition: Accessing H+HCO products via S₀ and T₁ Pathways”, L.R. Valachovic, M.F. Tuchler, M Dulligan, Th. Droz-Georget, M. Zyrianov, A Kolessov, C. Wittig, *J. Chem Phys.*, **112**(6), 2752 (2000).

”HCO Rotational Excitation in the Photoinitiated Unimolecular Decomposition of H₂CO”, M. J. Dulligan, M. F. Tuchler, J. S. Zhang, A. Kolessov, C. Wittig, *Chem. Phys. Lett.* **276**, 84 (1997).

“Real-Time Study of Bimolecular Interactions – Direct Detection of Internal Conversion Involving Br(²P_{1/2}) + I₂(v=0) → Br(²P_{3/2}) + I₂(v>0),” M. F. Tuchler, S.A. Wright, J. D. McDonald, *J. Chem. Phys.* 106, 2634 (1997).

“Picosecond Observation of Electronic Quenching: Br(²P_{1/2}) + I₂(v=0) → Br(²P_{3/2}) + I₂(v>0) by Geometrically Restricted Reaction,” S. A. Wright, M. F. Tuchler, J. D. McDonald; *Chem. Phys. Lett.* **226**, 570 (1994).

GRANT SUPPORT

“Direct Determination of Equilibrium Constants of Oxides of Nitrogen With Cavity Ringdown Absorption Spectroscopy” (Thomas F. and Kate Miller Jeffress Memorial Trust, June ,2005)

“A Versatile Laser-Based Experimental Setup for the Chemistry and Physics Curriculum at Washington and Lee University” (NSF-DUE CCLI 2000-2002, \$86,333; Institutional Contribution \$86,333).

Glenn Research Grant (Washington and Lee Universtiy) 1999-2005

Robert E. Lee Summer Research Program (Washington and Lee University) 1999-2005

COURSES TAUGHT

Chemistry 111 – General Chemistry

Chemistry 210 – Structure and Reactivity of Molecules

Chemistry 261 – Physical Chemistry I: Thermodynamics, Kinetics and Statistics

Chemistry 262 – Physical Chemistry II: Quantum Chemistry and Spectroscopy

Chemistry 266, 267 – Physical Chemistry Laboratory

Chemistry 295B – Developments in Physical Chemistry

Chemistry 365 – Advanced Physical Chemistry: Angular Momentum in Chemistry
Chemistry 365 – Advanced Physical Chemistry: Atmospheric Chemistry
Chemistry 421 – Directed Individual Research
Chemistry 471 – Senior Thesis
Chemistry 493 – Honors Thesis

PROFESSIONAL EDUCATION AND TRAINING:

Atomic and Molecular Interactions Gordon Conference, Colby-Sawyer Collage, NH, 2000.
Atoms and Molecules Gordon Conference, RI, 2002.
Atmospheric Chemistry Gordon Conference, Big Sky, MT, 2003.
NSF-CCLI: Invention and Impact Review, Cristal City, VA, 2004.