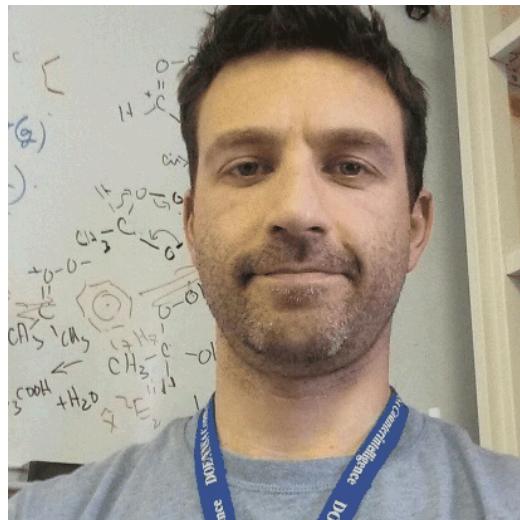


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**SHORT BIO:**

I was born in Moscow, Russia, and have lived in the US since 1992. After college I worked as a field biologist for a few years before entering a PhD program in Chemistry at the University of Wisconsin, Madison. In graduate school I used 100-femtosecond laser pulses to study chemical reactions and vibrational energy transfer in liquids. Later, as a postdoc (at JILA in Boulder, CO) I focused on excited-state solvation dynamics and charge transfer in molecular clusters. Since then, I have completed my transition into the gas phase and am currently studying chemical kinetics and spectroscopy of gas-phase radicals and reaction intermediates.

My interests lie in developing experimental methods and applying them to gain detailed insight into Atmospheric and Combustion Chemistry. For example, we are extending the principle of time-resolved synchrotron photoionization mass spectrometry to probe chemistry at elevated pressures. In this technique gases are sampled out of a high-pressure reactor into a vacuum chamber, ionized, and detected with species (and isomer) selectivity. For best sensitivity, our new experimental design will ionize the very dilute reaction mixtures in a high-density region of the sampling expansion, then use sophisticated guides to transfer the ions to the detector.

Another current direction in my lab is the development of time-resolved broadband cavity-enhanced absorption spectrometry. This all-optical detection method achieves a factor of  $\sim 100$  sensitivity increase over single-pass absorption measurements over a very broad spectral range (300 – 700 nm) simultaneously. The ability to monitor broad transient absorption spectra is critical when probing complex chemical environments, and optical cavity enhancement is the key to making absorption spectrometry a useful tool for gas-phase kinetics measurements.

**RESEARCH INTERESTS**

Chemical kinetics, photochemistry, molecular spectroscopy

**EDUCATION**

B.S., Northland College (1998)  
PhD, University of Wisconsin, Madison (2005)

## SELECTED PUBLICATIONS:

1. L. Sheps, "Absolute ultraviolet absorption spectrum of a Criegee intermediate  $\text{CH}_2\text{OO}$ " *J. Phys. Chem. Letters*, **4**, 4201 (2013)
2. O. Welz, J. Zádor, J. D. Savee, L. Sheps, D. L. Osborn, and C. A. Taatjes, "Low-temperature combustion chemistry of *n*-butanol: principal oxidation pathways of hydroxybutyl radicals" *J. Phys. Chem. A.*, **117**, 11983 (2013)
3. O. Welz, J. D. Savee, A. J. Eskola, L. Sheps, D. L. Osborn, and C. A. Taatjes, "Low-temperature combustion chemistry of biofuels: pathways in the low-temperature (500 – 750 K) oxidation chemistry of isobutanol and *tert*-butanol" *Proc. Comb. Inst.*, **34**, 493 (2013)
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5. A. S. Case, E. M. Miller, J. P. Martin, Y.-J. Lu, L. Sheps, A. B. McCoy, and W. C. Lineberger, "Dynamic Mapping of CN rotation following photoexcitation of  $\text{ICN}^-$ " *Angew. Chem., Int. Ed.*, **51**, 2651 (2012)
6. S. W. Wren, K. M. Vogelhuber, J. M. Garver, S. Kato, L. Sheps, V. M. Bierbaum, and W. C. Lineberger, "C-H bond strengths and acidities in aromatic systems: effects of nitrogen incorporation in mono-, di-, and triazines" *J. Am. Chem. Soc.*, **134**, 6584 (2012)
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8. K. M. Vogelhuber, S. W. Wren, L. Sheps, and W. C. Lineberger, "The C-H bond dissociation energy of furan: photoelectron spectroscopy of the furanide anion" *J. Chem. Phys.*, **134**, 064302 (2011)
9. L. Sheps, E. M. Miller, S. Horvath, M. A. Thompson, R. Parson, A. B. McCoy, and W. C. Lineberger, "Solvent-mediated charge redistribution in photodissociation of  $\text{IBr}^-$  and  $\text{IBr}^-(\text{CO}_2)$ " *J. Chem. Phys.*, **134**, 184311 (2011)
10. L. Sheps, E. M. Miller, S. Horvath, M. A. Thompson, R. Parson, A. B. McCoy, and W. C. Lineberger, "Solvent-mediated electron hopping: long-range charge transfer in  $\text{IBr}^-(\text{CO}_2)$  photodissociation" *Science*, **328**, 220 (2010)
11. L. Sheps, E. M. Miller, and W. C. Lineberger, "Photoelectron spectroscopy of small  $\text{IBr}^-(\text{CO}_2)_n$  ( $n=0-3$ ) cluster anions" *J. Chem. Phys.*, **131**, 064304 (2009)
12. L. Sheps, A. C. Crowther, S. L. Carrier, and F. F. Crim, "Time-resolved spectroscopic study of the reaction  $\text{Cl} + \text{n-C}_5\text{H}_{12} \rightarrow \text{HCl} + \text{C}_5\text{H}_{11}$  in solution" *J. Phys. Chem. A*, **110**, 3087 (2006)
13. L. Sheps, A. C. Crowther, C. G. Elles, and F. F. Crim, "Recombination dynamics and hydrogen abstraction reactions of chlorine radicals in solution" *J. Phys. Chem. A*, **109**, 4296 (2005)

14. M. M. Heckscher, L. Sheps, D. Bingemann, and F. F. Crim, “Relaxation of the C–H stretching fundamental vibrations of  $\text{CHI}_3$ ,  $\text{CH}_2\text{I}_2$ , and  $\text{CH}_3\text{I}$  in solution” *J. Chem. Phys.*, **117**, 8917 (2002)