



Exponent®

Engineering & Scientific Consulting

Erin Sullivan, Ph.D., CLSO

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Professional Profile

Dr. Sullivan specializes in laser safety, optics, and spectroscopy. Trained as a physical chemist, Dr. Sullivan leverages her knowledge of fundamental chemical processes and light-matter interactions to analyze a wide range of problems related to optical hazards, material aging, materials characterization, and electrical and optical design.

At Exponent, Dr. Sullivan assists clients with safety considerations when designing and employing optical systems including LiDAR, LEDs and lasers for use in the medical field, and augmented/virtual (AR/VR) reality systems. She is an expert in developing and executing protocols for laser/LED safety analysis in addition to identifying and testing potential failure modes.

In addition to optical safety, Dr. Sullivan performs material characterization to help clients improve product development. She is well-versed in commercial and custom-built characterization techniques for transmittance, fluorimetry, Fourier Transform Infrared spectroscopy (FTIR), haze, colorimetry, and birefringence. Dr. Sullivan also leverages her chemistry background to help clients understand aging and failure mechanisms of polymer materials in the energy, construction, medicine and transportation industries.

Prior to joining Exponent, Dr. Sullivan obtained her Ph.D. from University of California Berkeley where she characterized the fundamental behavior of free radicals. She integrated unique instrumentation at multiple laser wavelengths to employ photofragment translational spectroscopy and photoelectron spectroscopy with the goal of understanding the chemical dynamics of atmospherically relevant free radicals. In addition to her graduate research background, Dr. Sullivan also has experience in maintaining and characterizing large-scale aquatic chemical systems at Walt Disney World Company.

Academic Credentials & Professional Honors

Ph.D., Chemistry, University of California, Berkeley, 2020

B.S., Chemistry, Fairfield University, 2014

Outstanding Graduate Student Instructor, University of California Berkeley, 2016

Senior Chemistry Award Recipient, Fairfield University, 2014

Phi Beta Kappa Honor Society, 2010

American Chemical Society Undergraduate Award in Inorganic Chemistry, 2013

American Chemical Society Undergraduate Award in Analytical Chemistry, 2012

Licenses and Certifications

Certified Laser Safety Officer (CLSO)

Prior Experience

Chemistry Intern, Walt Disney World Company, 2014-2015

Publications

Sullivan, E. N., Saric, Steven, and Neumark, D. M., "Photodissociation of *iso*-propoxy ($i\text{-C}_3\text{H}_7\text{O}$) radical at 248 nm," *Phys. Chem. Chem. Phys.*, 2020.

Nichols, B., Sullivan, E. N., and Neumark, D. M., "Photodissociation dynamics of the *tert*-butyl perthiyl radical," *J. Chem. Phys.*, 2020, 152, 244301.

Sullivan, E. N., Nichols, B., von Kugelen, S., da Silva, G. and Neumark, D. M., "Multiphoton dissociation dynamics of the indenyl radical at 248 nm and 193 nm," *J. Chem. Phys.*, 2019, 151, 174303.

Sullivan, E. N., Nichols, B., and Neumark, D. M., "Fast beam photofragment translational spectroscopy of the phenoxy radical at 225 nm, 290 nm, and 533 nm," *Phys. Chem. Chem. Phys.*, 2019, 21, 14270.

Sullivan, E. N., Nichols, B. and Neumark, D. M., "Photodissociation studies of the simplest alkyl peroxy radicals, CH_3OO and $\text{C}_2\text{H}_5\text{OO}$, at 248 nm," *J. Chem. Phys.*, 2018, 148, 033409.

Nichols, B., Sullivan, E. N., Ryazavno, M., Hong, C. M., and Neumark, D. M., "Investigations of the two- and three-fragment photodissociation of the *tert*-butyl peroxy radical at 248 nm," *J. Chem. Phys.*, 2017, 147, 134304.

Nichols, B., Sullivan, E. N., Ryazanov, M., and Neumark, D. M., "Photodissociation dynamics of the *i*-methylvinoxy radical at 308, 248, and 225 nm using fast beam photofragment translational spectroscopy," *J. Chem. Phys. A*, 2017, 121, 579.

Harrison, A. W., Ryaznov, M., Sullivan, E. N., and Neumark, D. M., "Photodissociation dynamics of the methyl perthiyl radical at 248 and 193 nm using fast-beam photofragment translational spectroscopy," *J. Chem. Phys.*, 2016, 145, 024305.

Brousseau, D. J., Braun, P. C., Harper-Leatherman, A. S., Sullivan, E. Baglivo, J. A., "Antimicrobial activity in the pallial cavity fluids of the *Crassostrea virginica* from a highly impacted harbor in western Long Island Sound," *J. Shellfish. Res.*, 2014, 33, 719-725.

Johnson, C. J., Wolk, A. B., Fournier, J. F., Sullivan, E. N., Weddle, G. H., and Johnson, M. A., "Communication: He-tagged vibrational spectra of the SarGlyH^+ and $\text{H}^+(\text{H}_2\text{O})_{2,3}$ ions: quantifying tag effects in cryogenic ion vibrational predissociation spectroscopy," *J. Chem. Phys.*, 2014, 140, 22110.

Presentations

Sullivan, E.N., Casafranca, A.C., Sullivan, S. Clarke, N. Moniz-Soares, B. Rasool, S. "PARC-An electrochemical salt separation technology." Cleantech to Market Symposium (Talk). Haas School of Business, University of California Berkeley, 2019.

Sullivan, E.N., Saric, S., Nichols, B., and Neumark, D.M. "Unimolecular dynamics of free radical systems

crucial to combustion chemistry reactive pathways." (Poster). BERC Energy Summit Innovation Expo, Berkeley, CA, January, 2019.

Erin N. Sullivan, Bethan Nichols, and Daniel M. Neumark, "Fast Beam Photofragment Translational Spectroscopy of the Phenoxy Radical" (Poster). Pacific Conference on Spectroscopy and Dynamics, San Diego, CA, January, 2019.

Sullivan, E.N., Nichols, B., and Neumark, D.M. "Fast Beam Coincidence Spectroscopy of Alkyl Peroxy Radicals" (Talk). Gordon Research Conference Molecular Interactions and Dynamics, Easton, MA, July, 2018.

Sullivan, E.N., Nichols, B., and Neumark, D.M. "Dissociation Studies of Indenyl Radicals Using Fast Beam Coincidence Translational Spectroscopy" (Poster). Gordon Research Conference Molecular Interactions and Dynamics, Easton, MA, July, 2018.

Sullivan, E.N., Nichols, B., and Neumark, D.M. "Photodissociation Studies of Alkyl Peroxy Radicals" (Poster). 34th International Symposium on Free Radicals, Hayama, Japan, August, 2017.

Sullivan, E.N., Nichols, B., Ryazanov, M., and Neumark, D.M. "Exploring Unimolecular Dissociation of Free Radicals Using Photofragment Translational Spectroscopy" (Talk). College of Chemistry Graduate Research Conference, Berkeley, CA, October, 2016.

Sullivan, E.N., Nichols, B., Ryazanov, M., Harrison, A.W., and Neumark, D.M. "Photodissociation Studies of Neutral Free Radical Species by Fast Beam Coincidence Translational Spectroscopy" (Poster). Gordon Research Conference Molecular Interactions and Dynamics, Easton, MA, July, 2016.

Sullivan, E.N., Kuo, C.-H., Gudz, A., and Suib, S.L. "Synthesis and characterization of zinc-doped titanium oxide for selective production of methyl lactate from biomass resources" (Talk). Northeast Regional Meeting of the American Chemical Society, New Haven, CT, October, 2013.

Sullivan, E.N., Harper-Leatherman, A.S., Brousseau, D.J., Braun, P.C. "Zinc and copper analysis of eastern oyster (*Crassostrea virginica*) fluid" (Poster). Northeast Region of the American Chemical Society Meeting, New Haven, CT, October, 2013.