



Exponent®

Engineering & Scientific Consulting

Chris Lyons, Ph.D.

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Professional Profile

Dr. Lyons specializes in chemical analysis and characterization of molecular systems and polymeric materials, including adhesives, elastomers, and rigid plastics, with emphasis on how materials incompatibility can influence device failure. He has experience in polymer fractography and how chemical mechanisms lead to polymer fracture, and has assisted clients on both proactive and litigation projects in a variety of industries, including consumer electronics, medical device, automotive, and construction.

Dr. Lyons is well versed in a variety of characterization techniques including Fourier transform infrared (FTIR) spectroscopy, micro-FTIR spectroscopy and mapping, scanning electron microscopy (SEM), energy dispersive X-ray spectroscopy (EDX), and transmission electron microscopy (TEM), as well as numerous thermal and spectroscopic characterization methods. In addition, he also has experience with polymer mechanical testing and failure recreation.

Before joining exponent, Dr. Lyons received his Ph.D. in chemistry from Stanford University where he was a fellow in the Center for Molecular Analysis and Design and participated in a multi-department collaboration on carbon capture and sequestration (CCS) research as part of Stanford's Global Climate and Energy Project. His research at Stanford included the design and synthesis of porous materials for carbon dioxide capture, as well as the synthesis and characterization of bio-inspired coordination complexes with redox active ligands.

Academic Credentials & Professional Honors

Ph.D., Chemistry, Stanford University, 2016

B.S., Professional Chemistry, California State University, Chico, 2009

Myer Ezrin Best Paper Award for the Failure Analysis & Prevention Special Interest Group, ANTEC, 2017.

Stanford University Center for Molecular Analysis and Design Fellow, 2013-2015

Outstanding Graduating Senior, Department of Chemistry California State University, Chico, May 2009

Outstanding Achievement in Inorganic Chemistry, California State University, Chico, May 2008

Outstanding Achievement in Physical Chemistry, California State University, Chico, May 2008

Outstanding Achievement in Organic Chemistry, California State University, Chico, May 2007

Professional Affiliations

American Chemical Society (member)

Society of Plastics Engineers

Publications

Lyons CT, Ansari F, Siskey R, Donthu S, MacLean S. Environmental Stress Cracking Failure of Amorphous Polymer Materials, ANTEC, Detroit MI, 2019.

Lyons CT, Ansari F, Siskey R, Donthu S, MacLean S. Mechanical Characterization and Fractography of PC, ABS & PMMA: A Comparison of Tensile, Impact & ESC Fracture Surfaces, ANTEC, Anaheim CA, 2017.

Lyons CT, Stack TDP. Recent advances in phenoxyl radical complexes of salen-type ligands as mixed-valent galactose oxidase models. *Coordination Chemistry Reviews* 2013; 257:528.

Pratt RC, Lyons CT, Wasinger EC, Stack TDP. Electrochemical and spectroscopic effects of mixed substituents in bis(phenolate)-copper (ii) galactose oxidase model complexes. *Journal of the American Chemical Society* 2012; 134:7367.

Citek C, Lyons CT, Wasinger EC, Stack TDP. Self-assembly of the oxy-tyrosinase core and the fundamental components of phenolic hydroxylation. *Nature Chemistry* 2012; 4:317.

Herres-Pawlis S, Verma P, Haase R, Lyons CT, Wasinger EC, Flörke U, Henkel G, Stack TDP. Phenolate hydroxylation in a bis(μ -oxo)dicopper(iii) complex: Lessons from the guanidine/amine series. *Journal of the American Chemical Society* 2009; 131:1154.

Presentations

Lyons CT, Ansari F, Siskey R, Donthu S, MacLean S. Environmental Stress Cracking Failure of Amorphous Polymer Materials, ANTEC, Detroit MI, 2019.

Lyons CT, Ansari F, Siskey R, Donthu S, MacLean S. Environmental Stress Cracking (ESC) Failure of Amorphous Polymer Materials, Materials Science and Engineering Conference, Pittsburg PA, 2017.

Lyons CT. Thermodynamics and kinetics of CO₂ capture on amine-functionalized mesoporous solids. Gordon Research Conference Poster, Carbon Capture and Sequestration, May 2015.

Lyons CT. Thermodynamics of CO₂ capture on amine functionalized mesoporous solids. Invited Lecture, California State University, Chico Department of Chemistry and Biochemistry, April 2015.