Graham Parkinson, PhD, PE

Senior Staff Consultant

Dr. Graham Parkinson is a Senior Staff Consultant in the Polymer, Composite, and Non-metallic Materials Practice at ESi. Dr. Parkinson holds a Ph.D. in Materials Science and Engineering and is a Licensed Professional Engineer. He specializes in conducting failure analysis and materials characterization investigations related to the performance of polymeric materials in plastic products from diverse industries. He provides technical consulting services to clients in the scientific and engineering industry as well as the insurance and litigation spaces. He has led numerous forensic investigations of component failures as well as failure of industrial systems to attribute the root-cause of failure to either material selection, processing, or part design. His expertise includes understanding of different material degradation mechanisms, different failure modes, and structure-property relationship of materials.

Prior to joining ESi, Dr. Parkinson worked as a Senior Consultant at Rimkus in the Materials Science and Engineering Practice. As the primary consultant responsible for investigation of plastic product failures, he worked on investigations of plastic piping and plumbing components, personal protective equipment, paints, coatings, sealants, as well as consumer products. In addition to working on polymers, he also applied materials science and engineering principles in investigations of the performance of concrete, glasses, ceramics, and both ferrous and non-ferrous metallic products. Dr. Parkinson's experience in materials science and engineering as well as chemical engineering leads to seamless project execution across multidisciplinary teams when performing complex failure analysis.

Dr. Parkinson's prior experience as a Teaching Professor, where he taught courses in materials science and engineering as well as an interdisciplinary senior design curriculum, allows him to explain complex technical issues in a manner that is easily understood by ESi's insurance and litigation clients. His work in the startup space allows him to easily adapt to new challenges and solve unique problems.

Licenses & Certifications

- State of Illinois P.E. License No. 062.076868
- State of California P.E. License No. MT 2066
- State of Colorado P.E. License No. PE 0066366
- Certified Beer Server, Cicerone Certification Program

Positions Held

Engineering Systems Inc., Aurora, Illinois

- Senior Staff Consultant, 2023 – Present

Rimkus, Centennial, Colorado

- Senior Consultant, 2022 – 2023

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Senior Staff Consultant

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4215 Campus Dr.
Aurora, IL 60504

Education

Ph.D., Materials Science & Engineering, Georgia Institute of Technology, Atlanta, Georgia, 2020

B.S., Chemical Engineering, University of Colorado, Boulder, Colorado, 2012

Areas of Specialization

Materials Characterization

Failure Analysis

Polymers and Macromolecules

Material Selection

Material Compatibility

Product Design

University of Denver, Denver, Colorado

- Visiting Teaching Assistant Professor, 2021 – 2022

WyoNano, Laramie, Wyoming

- Senior Research Engineer, 2021

Georgia Institute of Technology, Atlanta, Georgia

- Graduate Research Assistant, 2012 – 2020

Atramento, Atlanta, Georgia

- Co-founder & CEO, 2014 – 2018

National Institute of Standards and Technology, Gaithersburg, Maryland

- Guest Researcher, 2014

Publications

Zhang, X.J.; Fu, J.; Zhang, Z.; Jangda, M.; Rosu, C.; **Parkinson, G. D. B.**; Russo, P.S. Differential Dynamic Microscopy: Diffusion measurements where you want them. *Macromolecules*. **2024**, 57, 1, 3-20.

Blake, A. M.; **Parkinson, G. D. B.**; Russo, P. S. Detection of a Polypeptide Conformation Transition in Solution via Sound Velocity. *Macromolecules*. **2020**, 53, 13, 5127-5139.

Presentations

Parkinson, G. D. B.; Zhang, X. J.; Russo, P. S. Comparison of analysis methods for Differential Dynamic Microscopy. Presented at the ACS Colloids Meeting, Atlanta, Georgia, June 16, 2019.

Parkinson, G. D. B.; Sun, J.; Russo, P. S. Breaking, healing, and templating of chemical and physical gel networks. Presented at the National Graduate Research Polymer Conference, Akron, Ohio, March 21, 2016.

Parkinson, G. D. B.; Sun, J.; Russo, P. S. Self-healing and disruption of arborol fibers. Presented at the ACS National Meeting, Denver, Colorado, March 26, 2015.

Qin, D.; Yang, Y.; Zhang, Q.; **Parkinson, G. D. B.** Ag-Au Bimetallic Nanoplates for Printable Electronics. Presented at the MRS Fall Meeting, Boston, Massachusetts, December 3, 2013.

Teaching

University of Denver (Instructor of Record)

ENME 2410 Materials Science I
ENME 2421 Materials Science II with Lab
ENGR 3313 Engineering Design Project I
ENGR 3323 Engineering Design Project II
ENGR 3333 Engineering Design Project III

Georgia Institute of Technology (Head Teaching Assistant)

MSE 2001 Principles and Applications of Engineering Materials
MSE 3021 Materials Laboratory I
MSE 4330 Fundamentals of Nanomaterials and Nanostructures
MSE 4410 Capstone Engineering Design I

University of Colorado (Invited Guest Lecturer)

LAWS 7343 Technical & Engineering Knowledge in Litigation
EMEN 5315 Business Law for Engineering Managers
CHEN 1300 Introduction to Chemical and Biological Engineering

Continuing Education

- **The Fundamentals of Neutron Scattering and Neutron Reflectometry** – NIST Center for Neutron Research Summer School, National Institute of Standards and Technology, 2015
- **Functional Microgels and Microgel Systems** – SFB 985 and Georgia Institute of Technology Joint Summer School, RWTH Aachen University, 2015

Professional Affiliations/Honors

American Institute of Chemical Engineers [AIChE]

American Chemical Society [ACS]

ASM International

- Failure Analysis Society

Omega Chi Epsilon-The Chemical Engineering Honor Society

The Minerals, Metals & Materials Society [TMS]