Jimmy Sommer

Senior Staff Consultant

As a senior staff consultant, Jimmy Sommer has experience in product design, materials characterization, failure analysis, custom fixture development, and laboratory management. Mr. Sommer is adept at the facilitation of material investigation (polymer, metals, chemistry) as well as fixture and method development for novel test applications.

In addition to his materials expertise, Mr. Sommer has also provided analysis for matters in other engineering disciplines, such as electrical, automotive, fire, biomechanics, and safety. His skill set includes the design and execution of product testing according to standards, specifications, and according to case-specific details. The extent of his expertise includes physical and analytical failure analysis techniques and equipment.

He received his Bachelor's Degree in Systems Engineering and Design from the University of Illinois Urbana-Champaign complemented by a secondary field in Product Design. His studies provide a diverse range of skills, from component and consumer-product design to control systems and electronics pertaining to robotics.

Education

BS, Systems Engineering and Design. University of Illinois Urbana Champaign. 2020.

Positions Held

Engineering Systems Inc., Aurora, Illinois

- Senior Staff Consultant, 2025 – Present
- Staff Consultant, 2024 – 2025
- Lab Manager, 2021 – 2023

University of Illinois Urbana Champaign, Champaign, Illinois

- Research Assistant, 2021
- Engineering Summer Camp Instructor, 2019

Contact Information

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ESi Aurora

4215 Campus Drive
Aurora, IL 60504

Areas of Specialization

- Lab & Industrial Services
- Material Characterization (FTIR, DSC, TGA, SEM/EDS, Hardness, UTM, CTL, Melt Flow)
- Custom Test Fixture Development
- Failure Analysis
- Safety
- Intellectual Property

Project Experience

Testing and Analysis

Water Bead Ingestion

- Analysis of water absorbent polymer beads' ability to pass through one's digestive system.
- Tested to and extended beyond method discussed in ASTM F963 Toy Safety Standard.

Wire Insulation Performance Comparison

- Characterized chemical composition and physical properties of several wire insulation variants.
- Assessed product viability from observed performance.

Hard Disk Drive Patent

- Performed precision disassembly of hard drives to uncover fragile micro components.
- Assessed compliance of multiple makes and models to patent documentation.

Ambulatory Device Failure

- Fixtured an ambulatory device to match the conditions of the incident to compare failure mode and fracture morphology

Lithium Ion-Battery Performance

- Employed a variety of analytical techniques to appraise lithium-ion batteries for safety and performance.
- Investigated failure mechanism including contamination, construction defects, and internal short circuits.

Wearable Health Device Patent

- Characterized fine geometry and the corresponding materials of an intricate device according to patent language, producing detailed figures.

Publications

"Micrographs of Polycarbonate Fracture Morphology at -20°C and Room Temperature (Digital Stereomicroscopy and SEM Images)", M.S. Ebert, **J.P. Sommer**, G. Nagalia, A.R. Shah, 2025 ASM Handbook, Volume 12A: Atlas of Fractographs, 420-421.

"Forensic Evidence of Arc Tracking as an Ignition Source," T.J. Bajzek, E.A. Burns, R.P Baron, B.M. May, **J.P. Sommer**, 2023 IEEE International Symposium on Product Compliance Engineering (ISPCE), 1-3.

Presentations

"Conquering Can Conundrums: Getting to the Bottom of Beverage Can Failures," E.A. Burns, E.E. Wright, **J.P. Sommer**, presented at the 2023 IMAT Conference, Detroit, MI, October 17, 2023.

"Metallurgical Evidence of Arc Tracking as an Ignition Source," E. Burns, T. Bajzek, R. Baron, B. May, and **J.P. Sommer**, presented at IMAT 2022, New Orleans, LA, September 12, 2022.

"Identification of Mixed In-Service Automotive Fluids inside a CVT and Differentials", G. Nagalia, E.J. Manuel, and **J.P. Sommer** presented at IMAT 2022, New Orleans, LA, September 12, 2022.

"Uncovering Generative Design Rationale in the Undergraduate Classroom," M.H. Goldstein, **J.P. Sommer**, N.T. Buswell, X. Li, Z. Sha, H.O. Demirel, 2021 IEEE Fronters in Education Conference (FIE), 1-6.