



When the systems or equipment you rely on break down or stop performing as intended, the results can be expensive and time consuming. Identification of the root cause for these issues becomes important to prevent reoccurrences, as well as to recover damages. Inadequacies in design, fabrication issues, misuse/abuse, and/or application need to be explored and identified to pinpoint the problem.

Materials experts play a vital role in evaluations and failure analyses. Whether the issue involves bending, breaking, corrosion/deterioration, or simply not working as intended, our engineers and scientists have the knowledge and skillset to determine the root cause. Manufacturers also utilize our expertise as an extension of their engineering team, and to investigate issues prior to litigation.

Our experts have decades of experience supporting clients throughout a wide range of industries in both the public and private sectors, including: aviation, automotive, commercial vehicles, agriculture, railroad, power generation, petrochemical, construction, consumer products, and manufacturing.

## Services

- Materials Analysis: metals, polymers, ceramics, composites
- Component and system failure analysis
- Fractography, deformation, other performance issues
- Mechanical and specialized testing
- Corrosion analysis and environmental degradation
- Structure/property relationship evaluations (metallography)
- Review of material specifications and properties
- Manufacturing and fabrication assessment, including: molding and injection molding, forging, casting, stamping, welding, machining, bolting, coating, powder metallurgy
- Product liability/Personal Injury
- Intellectual property
- Aerial (Drone / UAS) inspections and laser scanning for scene documentation



## Practice Area Leaders

## *Materials and Metallurgical Engineering*

### ***Roch J. Shipley, Ph.D., FASM, P.E. – Principal Engineer, Materials/Metallurgical***



Dr. Shipley performs engineering investigations and failure analysis from a materials engineering perspective. His evaluations involve design, manufacturing, materials, and operational factors. He specializes in complex issues involving multiple disciplines and/or accident reconstruction. He has experience with both ferrous and non-ferrous alloys, including aluminum, titanium, and nickel-base superalloys. Dr. Shipley is licensed by examination as a Professional Engineer and has testified in both State and Federal Courts.

### ***Michael G. Koehler, Ph.D. – Principal Scientist, Chemistry***



Dr. Koehler performs investigations and failure analyses from a chemistry and materials science perspective. His experience crosses a broad range of chemicals and materials including metals and alloys, protective coatings, polymers and plastics, fuels, catalysts, refrigerants, filtration media, membranes, and pharmaceuticals. Dr. Koehler's technical expertise involves the complete cradle-to-grave life cycle of products including the design, manufacturing, transportation, application, failure analysis, and disposal. His application experiences include aerospace materials, consumer products, automobiles, building materials, furniture, and medical products.

### ***George J. Theus, Ph.D., P.E. – Senior Engineer, Materials***



Dr. Theus performs engineering and forensic investigations involving corrosion and other material problems. He specializes in complex issues involving multiple disciplines and has over 40 years of experience. He has been a member of EPRI's expert panel regarding materials issues on nuclear power plants. Dr. Theus has both national and international experience. He is a Registered Licensed Professional Engineer (by examination) and has testified in both State and Federal Court.