



Advanced Engineering Investigations

SHAWN A. SAPP, PH.D.

Dr. Sapp has been a practicing materials scientist and analytical chemist since 2002. He is ASM Certified in Fracture Mechanics, Fractography, and Failure Analysis to determine the origin and cause of failures in metals, ceramics, plastics, and composites. He is a highly experienced electrochemist and metallographer with over twelve years of experience in industrial, aerospace, marine, and electronic materials testing and surface analysis. His knowledge of process chemistry spans from pilot-scale pharmaceutical synthesis and bio-conversion to full-scale petrochemical production. He has expertise in investigating accidents in the firearms, battery, plumbing, lighting, chemical process and oil & gas industries; analyzing for incompatible, flammable, and combustible materials-related accidents, and investigating chemical release or exposure-related incidents.



EDUCATION & LICENSURE

BS, Chemistry, University of Florida, Gainesville, FL, 1996

PhD, Analytical/Materials Chemistry, Colorado State University, 2002

ASM-Certified Training in: Practical Fracture Mechanics & Fractography, 2015

Alfred University, College of Ceramics: Fracture Analysis & Failure Prevention of Glasses & Ceramics, 2015

NACE-Certified Training in: Basic Corrosion, 2016

WORK HISTORY

Lead Scientist, *AEI Corporation*, May 2015 to Present

Director of Research, *Tusaar Corporation*, 2014 to 2015

Senior Chemist, *TDA Research Inc.*, 2002 to 2014

EXPERIENCE

Dr. Sapp has spent his career applying his knowledge of chemistry, physics, and engineering to the investigation and analysis of a wide variety of surfaces and materials. His early career was spent developing new electronic, functional, polymeric, composite, synthetic, natural, bio-degradable, or nano-materials for advanced technologies. His prior R&D experience gives him a solid working knowledge that directly applies to forensic investigations. Dr. Sapp is an expert in optical & electron microscopy, with over a decade of experience using a variety of SEM, TEM & elemental analysis equipment. His experience also includes a wide range of chemical and physical property analysis testing techniques, including ICP-MS, GC-MS, HPLC, DSC-TGA, hardness and tensile testing, DMA, FTIR, Energy Dispersive Spectroscopy, Optical Emission Spectroscopy, X-ray Fluorescence Spectroscopy, and X-ray Diffraction.

Dr. Sapp has over twenty years of experience in chemical laboratory hygiene, best practices and safety, testing, safe handling, destruction, and disposal of highly reactive, energetic materials and pyrophoric reagents, including knowledge of the flammability characteristics of liquids, powders, plastics, composites, and structural materials. He has conducted hazard analyses of materials, equipment and processes, designed, analyzed and implemented quality control experiments, and authored safe operating procedures to comply with OSHA, EPA, DOT, and local county and municipality regulations regarding the safe handling and disposal of hazardous materials.

PUBLICATIONS

List available on request.

AFFILIATIONS

American Chemical Society (ACS)

American Society of Metals (ASM International)

Materials Research Society (MRS)

National Association of Corrosion Engineers (NACE International)

Chemists Without Borders "Humanitarian Solutions Worldwide"