



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 electronics corrosion testing and surface analysis. His knowledge of process chemistry spans from pilot-scale pharmaceutical synthesis and bio-conversion, to full-scale petro-chemical production. He has expertise in investigating accidents in the chemical process and oil & gas industries; analyzing flammable and combustible liquid-related accidents; and investigating carbon monoxide and 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 the majority of 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 experience gives him a solid working knowledge that can be applied to forensic engineering. Dr. Sapp is an expert in optical & electron microscopy, a certified user of the electron microscopy center at Colorado School of Mines on a variety of FE-SEM, TEM & EDS equipment, and is experienced with a wide variety of chemical and physical property analysis techniques, including ICP-MS, GC-MS, HPLC, Gel Permeation Chromatography, DSC-TGA, hardness and tensile testing, DMA, FTIR, Optical Emission Spectroscopy, X-ray Fluorescence Spectroscopy, and X-ray Diffraction.

Dr. Sapp has nearly twenty years of experience in chemical laboratory hygiene, best practices and safety, including knowledge of the flammability characteristics of liquids, powders, plastics, composites, and structural materials; testing, safe handling, destruction, and disposal of highly reactive, energetic materials and pyrophoric reagents. 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.

PATENTS

U.S. 7,019,138; U.S. 7,361,728 B1; U.S. 7,687,582;
U.S. 8,097,348 B2

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"