

GAURAV NAGALIA, M.S.

SENIOR STAFF CONSULTANT

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Mr. Gaurav Nagalia is a Senior Staff Consultant in ESi's polymer, composite, and non-metallic practice group. He is experienced in analysis of products manufactured from polymer, polymer composites, rubber, and ceramic materials. Mr. Nagalia applies his knowledge in material chemistry, material characterization, chemical analysis, thermal analysis, and processing techniques to investigate products from various industries. Mr. Nagalia routinely performs investigations related to plastic product failure analysis. These investigations are related to failures in polymer coatings, plastic films, sheets and laminates, polymer-based adhesives and lubricants, molded and extruded plastic products with complex geometries such as threaded and flanged connections. Industries that benefit from these investigations include plumbing, coatings, adhesives, construction, consumer products, medical devices, and many others.

Prior to joining ESi, Mr. Nagalia was employed by Don Bosco Technical Institute as Materials Science Instructor where he taught courses and managed laboratories associated with the department. Prior to that he worked as an engineer in the automotive industry conducting failure analysis on acoustic plastic materials used in interior applications in automobiles.

Mr. Nagalia's additional experience includes characterization of ceramic materials and processing methods of ceramic materials. Mr. Nagalia has experience developing, testing, and analyzing concrete based ceramic composites.

Areas of Specialization

- Material Characterization (FT-IR, DSC, TGA, SEM/EDS, XRD, XRF, DMA)
- Plastics Failure Analysis
- Polymer Chemistry & Molding
- Mechanical Testing
- Non-Destructive Testing
- Product Development & Process Improvement

Education

M.S., Materials Science and Engineering, University of Texas, Arlington, Texas, 2014
B.Eng., Polymer Engineering, University of Pune, Pune, Maharashtra, 2012

September 2021



Professional Affiliations

ASM International
Member

Society of Plastics Engineers (SPE)
Member

Member, Board of Directors, SPE Chicago Section 2021-22
Member, Failure Analysis and Prevention Technical Interest Group (FAPTIG)

American Society for Testing and Materials (ASTM)

Member, Committee C14 – Glass and Glass Products

Sub Committee 04 – Physical and Mechanical Properties

Member, Committee D20 – Plastics

Sub Committee 10 – Mechanical Properties

Sub Committee 10.24 – Fracture and Fatigue

Sub Committee 15 – Thermoplastic Materials

Sub Committee 16 – Thermosetting Materials

Sub Committee 18 – Reinforced Thermosetting Materials

Sub Committee 19 – Film, Sheet, and Molded Products

Sub Committee 24 – Plastic Building Products

Sub Committee 30 – Thermal Properties

Sub Committee 70 – Analytical Methods

Sub Committee 70.08 – Spectroscopic Methods

Member, Committee D17 – Plastic Piping Systems

Sub Committee 25 – Vinyl Based Pipe

Sub Committee 26 – Olefin Based Pipe

Sub Committee 40 – Test Methods

Sub Committee 60 – Gas

Sub Committee 67 – Trenchless Plastic Pipeline Technology

Positions Held

Engineering Systems, Inc. (ESi), Aurora, Illinois
Senior Staff Consultant, 2018 – Present

Don Bosco Technical Institute, Rosemead, California
Materials Science STEM Instructor, 2016 – 2018



UGN Inc. (Research & Development), Valparaiso, Indiana
Materials Engineer, 2015 – 2016

University of Texas, Arlington, Texas
Graduate Research Assistant, 2012 – 2015

DSM, Pune, Maharashtra
Plastics Engineer Intern, 2011 to 2011

Teaching

Mr. Nagalia has taught:

“Mechanical Testing of Materials”, 2016 – 2018

“Non-Destructive Testing of Materials”, 2016 – 2018

“Materials for Design Engineers”, 2016 – 2018

“Introduction to Polymer Science”, 2016 – 2018

“Chemical Analysis”, 2016 – 2018

Continuing Education/ Training

Attended Webinar on “Formulating Thermoplastics with Non-Halogen Flame Retardants: An Introduction” by Society of Plastic Engineers (SPE), Feb 2021

Attended Webinar on “Root Cause Analysis” by J.E. Lincoln and Associates LLC, Nov 2020

OSHA Certified, Operation of Counterbalanced (Gas/Electric) Forklift, Jan 2019

Technical Presentations

“Failure Analysis of Products with Plastic to Metal Threaded Connections,” Society of Plastics Engineers, ANTEC® 2021, May 2021

“Failure Analysis of Polymer Coating Systems,” Society of Plastics Engineers, ANTEC® 2020: The Virtual Edition, Mar 2020

“Development and Analysis of Fly Ash based Geopolymer Concrete” ASM North Texas Annual Conference, Nov 2013

Publications

“Wear Failures of Plastics”, ASM Handbook, Volume 11B, Characterization and Failure Analysis, ASM International, Release scheduled for 2022 (accepted for publication)

“Failure Analysis of Products with Plastic to Metal Threaded Connections”, Society of Plastics Engineers, ANTEC® 2021, with A.R. Shah, May 2021

“Failure Analysis of Polymer Coating Systems”, Society of Plastics Engineers, ANTEC® 2020: The Virtual Edition, with A.R. Shah and D.B. Edwards, Mar 2020

“Compressive Strength and Microstructural Properties of Fly Ash-Based Geopolymer Ceramic Composite”, Journal of Materials in Civil Engineering, with Dr. Y. Park, Dr. A. Abolmaali and Dr. P. Aswath, Dec 2016

Review

“Performance Evaluation of Polyamide-12 Pipe Serviced in Acid Oil and Gas Environment” Journal of Failure Analysis and Prevention, JFAP-21-08-3139, completed review in Sep 2021

“Creep Failure Mechanisms”, ASM Handbook, Volume 11B, Characterization and Failure Analysis, ASM International, completed review in Jul 2021

“Flammability Testing”, ASM Handbook, Volume 11B, Characterization and Failure Analysis, ASM International, completed review in Jun 2021

“Experimental investigation of FSW process on high-density polyethylene (HDPE)” Journal of Failure Analysis and Prevention, JFAP-19-11-2360, completed review in Jan 2020