10338 Miller Road
Dallas, TX 75238

# RICHARD P. BARON, Ph.D., P.E.
# PRINCIPAL
# DIRECTOR, MATERIALS

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Dr. Baron is a Principal and Director for ESi. His forensic engineering consulting career started at Materials Analysis, a respected engineering consulting firm that joined ESi in 2012. He has over 27 years of experience in the preparation, characterization, and failure analysis of metallic, polymeric, and ceramic materials, composites, and coatings. His work experience spans multiple industries, including aviation, HVAC, automotive, commercial products, electronic components, complex mechanical assemblies, and water distribution systems; and includes a wide range of different projects, including multidisciplinary failure investigations of high-temperature turbine components, piston engines, oil and gas components, commercial products, electronic components, complex mechanical assemblies, and water distribution systems.

Dr. Baron earned his Bachelors and Masters Degrees at Lehigh University and his Doctorate at the University of Virginia. All of his degrees are in Materials Science and Engineering, and he is a licensed Professional Engineer (P.E.) in Texas and Oklahoma. He serves as a technical reviewer for ASM International's Journal of Failure Analysis and Prevention and routinely presents failure analysis investigations at technical forums. He has testified as a qualified professional engineering expert in both state and federal courts.

## Areas of Specialization

Engineering Failure Analysis
Railroad and Transit
Non-Metallic Materials
Turbine Components
Electrical Components
Corrosion Engineering
Welding Metallurgy
Testing and Examinations
Piston Engines

## Education

Ph.D., Materials Science and Engineering, University of Virginia, 1998
M.S., Materials Science and Engineering, Lehigh University, 1994
B.S., Materials Science and Engineering, Lehigh University, 1993

## Licensed Professional Engineer (P.E.)

State of Texas…….. License No. 92534
State of Oklahoma…… License No. 27062

***April 2025***

## Professional Affiliations

The Minerals, Metals & Materials Society Member, 2003 - Present
Engineer-in-Training Certification, 1993
American Society of Metals and Materials Member, 1991 – Present
American Welding Society, 2006 - Present
ASTM International, 2012 – Present

## Certificates

SuperAlloys for Heavy-Duty and Aircraft-Type Gas Turbines, Certificate of Completion, University of Florida, 2018
Technical Committee for Excellence, Certificate of Participation, Houston Fire Dept., 2001
Engineer-in-Training Certification, 1993

## Honors/Awards

Phi Eta Sigma Honor Society
Tau Beta Pi Honor Society
Alpha Sigma Mu Honor Society
Bachelor of Science with High Honors – Lehigh University
John Cyril Osbourn Award – Lehigh University

## Positions Held

### Engineering Systems Inc., Dallas, Texas

Director, Materials 2021-present
Principal 2019-present
Manager of Dallas Operations, 2015 – 2020
Senior Managing Consultant 2015-2018
Senior Consultant, 2011 – 2015

### Materials Analysis, Inc., Dallas, Texas

Staff Engineer, 2003 – 2011
Graduate Engineer, 1998 – 2003

### University of Virginia, Charlottesville, Virginia

Graduate Research Assistant, 1994 – 1998
Graduate Teaching Assistant, 1997

### Advanced Material Development Center, Saginaw, Michigan

Summer Research Intern, 1995

**Energy Research Center, Bethlehem, Pennsylvania**

Graduate Research Assistant, 1993 – 1994

## Continued Education

Gas Turbine Engine Accident Investigation
USC, April 2025

SuperAlloys for Heavy-Duty and Aircraft-Type Gas Turbines
Certificate of Completion, University of Florida, 2018

Model 250 Series IV (C40/C47) Engine Maintenance Training Course
Rolls Royce, 2008

Basic Gas Turbine Engine Technology
International Gas Turbine Institute, American Society of Mechanical Engineers, ASTM International, 2000

## Publications/Presentations

"Visual Examination and Photography in Failure Analysis"
ASM Handbook, Volume 11B, October 2021

"Creep and Stress-Rupture Failures"
ASM Handbook, Volume 11, October 2020

"The Little Plane that Could: Failure Analysis of a Robust Turbine Engine"
D.E. Alexander, R. Baron, M. Lewis, C. Smith, P. Umberger, E. Wright, presented at 2019 MS&T Technical Meeting, Portland, OR, October 3, 2019

“Investigation of a Compressor Turbine Blade Failure Involving the Fir Tree Attachment Condition,”
E. Wright, G. Novak, R. Baron, D. Ahearn, D.E. Alexander, presented at 2018 MS&T Technical Meeting, Columbus, OH, October 15, 2018

“Failure of Recreational Products: Case Studies,”
R.P. Baron, A.E. Richards, M.J. Mulherin
MS&T 16, Invited Speaker, Salt Lake City, Utah, October 2016.

"Failure Analysis of a Titanium Golf Club Head"
Journal of Failure Analysis and Prevention, Volume 10, Issue 6, December 2010

"Failure Analysis of Some Uncommon Welds"
American Welding Society – North Texas Section, October 2007

"Failure Analysis of First Stage Turbine Air Seal Assembly"
Materials Science and Technology (MS&T) Fundamentals and Characterization, Volume 1, October 2006

"The Processing and Characterization of Sintered Metal Reinforced Aluminum Matrix Composites"
Ph.D. Dissertation, August 1998

"Mechanical Properties of Aluminum Matrix Composites Reinforced with Sintered Ferrous Compacts"
Materials Science and Engineering, 1998

"Relationship Between Fractional Porosity and Tensile Strength for High-Porosity Sintered Ferrous Powder Components"
Scripta Materialia, 1998

"The Processing and Characterization of Sintered Metal Reinforced Aluminum Matrix Composites"
Journal of Materials Science, 1997

"Oxidation and Erosion Resistance of Amorphous Bright Chromium Electroplated Coatings"
Advances in Surface Engineering, Volume 2: Process Technology, 1997

"The Diffusion and Properties of an Amorphous Bright Chromium Deposit on an Iron-Carbon Substrate"
M.S. Thesis, 1994