

**Professional Resume  
of  
AARON K. BARKLAGE, P.E.**

January 2024

**I. General Information**

Metallurgical / Materials Engineer  
Schaefer Engineering, Inc.  
Wentzville, Missouri

**II. Professional Summary**

**A. Education:**

Bachelor of Science, Magna Cum Laude – 2000  
Metallurgical Engineering  
University of Missouri – Rolla (now the Missouri University of Science and Technology)  
Rolla, Missouri

**B. Experience:**

June 2015 to present  
Position: Metallurgical / Materials Engineer  
Schaefer Engineering, Inc.  
Wentzville, Missouri

Responsible for materials and mechanical engineering projects with emphasis in the evaluation of the appropriateness of material selection, analysis of various types of material failures, and evaluation of material fabrication methods and quality.

July 2011 to June 2015  
Position: Manager, Technical Services & Market Development Engineering  
Global Brass and Copper d.b.a. Olin Brass  
East Alton, Illinois

Managed an engineering group that provided customer technical support and complaint resolution on copper alloy products. Responsible for failure analysis, technical document creation (PPAPs, FMEAs, Control Plans), specification review, and leading Quality Function Deployment (QFD) events at customer facilities.

**Experience (continued):**

February 2010 to June 2011

Position: Senior Metallurgical Engineer  
Briem Engineering  
St. Louis, Missouri

Responsible for materials engineering & forensic engineering projects for various clients. Performed laboratory testing such as: metallography, fracture analysis, hardness testing, tensile testing, x-ray imaging, and SEM/EDS analysis.

August 2009 to January 2010

Position: Technical Manager  
Foroni Metals of Texas  
Houston, Texas

Provided customer technical support for the specification and application of corrosion resistant alloys (nickel based and specialty stainless steel alloys).

April 2006 to July 2009

Position: Process Engineering Manager  
Caterpillar, Inc. High Performance Extrusions  
Oxford, Mississippi

Managed the process engineering and plant engineering groups that supported hydraulic hose coupling manufacturing. The supported processes included: annealing, zinc phosphate coating, cold extrusion, machining, brazing, and plating.

March 2004 to March 2006

Position: Failure Analyst and Laboratory Manager  
Caterpillar, Inc. Track Type Tractors  
East Peoria, Illinois

Managed Caterpillar's largest metallurgical laboratory and attained ISO 17025 laboratory accreditation. Performed failure analysis on Caterpillar equipment components such gears, ground engaging tools, and hydraulic components.

March 2002 to February 2004

Position: Supplier Quality Engineer  
Caterpillar, Inc. Global Purchasing  
Mossville, Illinois

Responsible for product development and supplier quality of forged components supplied to Caterpillar.

**Experience (continued):**

May 2000 to February 2002

Position: Failure Analysis Engineer  
Caterpillar, Inc. Technical Services Division  
Mossville, Illinois

Responsible for failure analysis of various Caterpillar components and for the maintenance of Caterpillar engineering specifications for steel, forgings, and fasteners.

**III. Professional Registration**

Licensed Professional Engineer in the following states:

Missouri	2011009643
Illinois	062-058671
Kansas	24986
Iowa	23381
Arkansas	17100
Texas	146290

NCEES Record Holder (#67024) for simplified licensure application in any state

Certified Fire and Explosion Investigator (NAFI-CFEI), National Association of Fire Investigators, (#22589-12906)

**IV. Professional Affiliations**

ASM International  
Association for Materials Protection and Performance (formerly NACE International)  
National Fire Protection Association (NFPA)  
International Association of Arson Investigators (IAAI)  
National Association of Fire Investigators International (NAFI)

**V. Publications**

O'Rourke, Robert & Barklage, Aaron; *Misunderstanding Surrounds ASTM A48*; Foundry Management & Technology, March 2000.

## **VI. Continuing Education**

- 2000 – Ultrasonic Testing Levels I & II  
Caterpillar, Inc., Peoria, Illinois
- 2001 – Applied Failure Analysis I  
Caterpillar, Inc., Peoria, Illinois
- 2001 – Caterpillar Product Operations  
Caterpillar, Inc., Peoria, Illinois
- 2001 – Heat Treatment of Steel  
ASM International, Materials Park, Ohio
- 2002 – Aluminum & Its Alloys  
ASM International, Materials Park, Ohio
- 2002 – Casting and Forging Profile Tolerance Training  
Caterpillar, Inc., Peoria, Illinois
- 2002 – Portland College of Forging Knowledge  
Portland Forge, Portland, Indiana
- 2003 – 6 Sigma Green Belt Training & Certification  
Caterpillar, Inc., Peoria, Illinois
- 2004 – ISO/IEC 17025 Accreditation Course  
American Association for Laboratory Accreditation (A2LA), Peoria, Illinois
- 2005 – Ferrous Microstructures Seminar  
University of Missouri-Rolla, Dr. David Van Aken, Peoria, Illinois
- 2005 – DMAIC / DMEDI Black Belt Training  
Caterpillar, Inc., Peoria, Illinois
- 2006 – Caterpillar Black Belt Certification  
Caterpillar, Inc., Peoria, Illinois
- 2008 – Fundamental of Brazing  
ASM International, Materials Park, Ohio
- 2009 – Nickel and Its Alloys  
ASM International, Materials Park, Ohio
- 2009 – Caterpillar Production System Support Qualification  
Caterpillar, Inc., Oxford, Mississippi
- 2011 – Quality Function Deployment (QFD) Green Belt Workshop  
The QFD Institute, Glenn H. Mazur, East Alton, Illinois
- 2012 – Quality Function Deployment (QFD) Black Belt Training  
The QFD Institute, Glenn H. Mazur, Saint Augustine, Florida
- 2012 – Fundamentals of Rolling  
Olin Brass, Brian Stacks, East Alton, Illinois
- 2013 – Situational Sales Negotiation  
The Bay Group International, Louisville, Kentucky
- 2015 – Understanding Fire Through the Candle Experiments  
IAAI, CFITrainer.net
- 2015 – The Scientific Method for Fire and Explosive Investigation  
IAAI, CFITrainer.net
- 2015 – The Practical Application of the Relationship between NFPA 1033 and NFPA 921  
IAAI, CFITrainer.net
- 2015 – Residential Natural Gas Systems  
IAAI, CFITrainer.net
- 2015 – Investigating Natural Gas Systems

- IAAI, CFITrainer.net
- 2015 – Fundamentals of Residential Building Construction  
IAAI, CFITrainer.net
- 2015 – Electrical Fire Investigation  
IAAI-IL, 2015 Annual Training Conference
- 2015 – Kitchen Fire Investigation  
IAAI-IL, 2015 Annual Training Conference
- 2015 – Investigation of Gas & Electric Appliance Fires  
Fire Findings, Benton Harbor, Michigan
- 2015 – Accreditation, Certification, and Certificates  
IAAI, CFITrainer.net
- 2016 – Plastic Part Failure: Analysis, Design & Prevention  
University of Wisconsin – Milwaukee
- 2017 – Anhydrous Ammonia Safety Awareness Training  
Illinois Fertilizer and Chemical Association
- 2017 – Advanced Fire Investigation Training Program  
National Association of Fire Investigators, International
- 2018 – Asbestos Operations & Maintenance Training  
Environmental Safety Training Center
- 2018 – Pressure Vessel & Piping Failures: Integrity Assessment and Repair Using ASME/API Codes  
ASME – American Society of Mechanical Engineers
- 2018 – Pressure Vessel & Piping Failures: Causes Mitigation, and Repair, General Corrosion  
ASME – American Society of Mechanical Engineers
- 2018 – Pressure Vessel & Piping Failures: Local Thin Areas  
ASME – American Society of Mechanical Engineers
- 2018 – Pressure Vessel & Piping Failures: Pitting Corrosion  
ASME – American Society of Mechanical Engineers
- 2019 – Asbestos Operations & Maintenance Refresher Training  
Environmental Safety Training Center
- 2019 – Aerial Lift Operator Training  
Safety Training Resources
- 2019 – Fall Protection  
Safety Training Resources
- 2019 – Forklift Safety  
Safety Training Resources
- 2019 – Certified Inspector Training  
American Association of Automatic Door Manufacturers (AAADM)
- 2019 – Fundamentals of Plastic Material Selection  
University of Wisconsin – Milwaukee
- 2020 – Asbestos Operations & Maintenance Refresher Training  
BlueSky
- 2021 – Asbestos Operations & Maintenance Refresher Training  
BlueSky
- 2021 – Anti-Harassment training for All Employees,  
RedVector.com
- 2021 – Generating Electricity,  
RedVector.com
- 2021 – Electrical Installations 1  
RedVector.com

- 2021 – Power Transmission and Distribution  
RedVector.com
- 2021 – Critical Evaluation and Testing of Commonly Reported Accidental Causes  
IAAI, CFITrainer.net
- 2021 – Documenting the Event  
IAAI, CFITrainer.net
- 2021 – Effective Investigation and Testimony  
IAAI, CFITrainer.net
- 2021 – Ethics and the Fire Investigator  
IAAI, CFITrainer.net
- 2021 – Explosion Dynamics  
IAAI, CFITrainer.net
- 2022 – Asbestos Operations and Maintenance Refresher  
The Asbestos Institute
- 2022 – Fire Chemistry  
IAAI, CFITrainer.net
- 2022 – Fire Flow Analysis  
IAAI, CFITrainer.net
- 2022 – Fire Investigator Scene Safety  
IAAI, CFITrainer.net
- 2022 – Fundamentals of Interviewing  
IAAI, CFITrainer.net
- 2022 – Insurance and Fire Investigation  
IAAI, CFITrainer.net
- 2022 – Lithium-Ion Battery Fires  
IAAI, CFITrainer.net
- 2023 – Ethics and the Fire Investigator  
IAAI, CFITrainer.net
- 2023 – Introduction to Evidence  
IAAI, CFITrainer.net
- 2023 – Investigating Motor Vehicle Fires  
IAAI, CFITrainer.net
- 2023 – Physical Evidence at the Fire Scene  
IAAI, CFITrainer.net
- 2023 – Residential Electrical Systems  
IAAI, CFITrainer.net

## **VII. Courses Taught**

- An Introduction to Materials and Metallurgy – February, 2017  
Will, Cook, Grundy County Fire Investigation Task Force, Tinley Park, Illinois
- An Introduction to Materials and Metallurgy – April, 2017  
Arkansas – IAAI Spring Conference
- An Introduction to Materials and Metallurgy – May, 2019  
Missouri – IAAI Annual Training Conference