Brett A. Pond, DSc, PE, CWI

Pond Industries LLC
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Professional Licenses/Certifications

Professional Mechanical Engineer (PE) in the following states:
Current/Active: FL, NE, WV
Past/Inactive: AL, AR, AZ, CA, CO, CT, DE, GA, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NH, NM, NV, NY, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VA, VT, WA, WI, WY

AWS Certified Welding Inspector (CWI)

Education

Washington University in St. Louis - St. Louis, Missouri
D.Sc. in Mechanical Engineering –August 2006
- Research and dissertation in the field of metallurgy / materials science

M.S. in Mechanical Engineering – May 2004
B.S. in Mechanical Engineering – May 2004
B.A. in Biology – May 2004

Work Experience

Pond Industries LLC **Omaha, Nebraska**
Principal Engineer and CEO *July 2019- present*
Provide engineering and metallurgical consulting and expert witness services.
Responsibilities:
- Expert witness services
- Mechanical engineering and metallurgical consulting services
- Quality management for mechanical and metallurgical services
- Business development for mechanical and metallurgical services

TUV Rheinland Industrial Solutions, Inc. (TRIS) **Aliquippa, Pennsylvania**
Principal Metallurgist *April 2014- June 2019*
Provide engineering consulting and testing services for industry leading ISO 17025 accredited testing firm; development and operation of metallurgical lab.
Responsibilities:
- Installation of strain gages, accelerometers, and linear potentiometers including data acquisition to determine operational performance of rail vehicles and rail systems.
- Failure analysis of cracked, broken, worn, or corroded components including rail, fasteners, track components, railcar components, heat exchanger tubes, axles and shafts, tanks, welds, springs, hitches, fans, centrifuges, impellers, chains, tools, and others.

- Metallurgical analysis of microstructural and material properties of various materials and parts.
- Material testing, including chemical analysis, hardness, tensile, fatigue, slow bend, dynamic rail, fracture toughness, residual stress, corrosion resistance, and impact testing, and microstructural analysis.
- Material characterization using advanced techniques and tools, including scanning electron microscopy (SEM), transmission electron microscopy (TEM), Fourier transform infrared (FTIR) spectroscopy, optical emission spectroscopy (OES), and energy dispersive spectroscopy (EDS).
- Design and design analysis using traditional methods as well as computer aided design (CAD) and finite element analysis (FEA).
- Deformation and thermal process analysis using FEA software capable of simulating plastic deformation processes such as hot and cold forming, forging, heat treatment, and grain refinement processes.
- Business development for metallurgical lab services.
- Expansion of ISO 17025 accredited test scope to include metallurgical testing and chemical analysis.

TUV Rheinland Rail Sciences, Inc. (TUV-RSI) **Omaha, Nebraska**
Director of Metallurgy *August 2006- April 2014*

Provide engineering consulting services for premiere international railroad engineering and consulting firm.

Responsibilities:

- Failure analysis of cracked, broken, worn, or corroded components including rail, fasteners, track components, railcar components, heat exchanger tubes, axles and shafts, tanks, welds, springs, hitches, fans, centrifuges, impellers, chains, tools, and others.
- Metallurgical analysis of microstructural and material properties of various materials and parts.
- Material testing, including chemical analysis, hardness, tensile, fatigue, slow bend, dynamic rail, fracture toughness, residual stress, corrosion resistance, and impact testing, and microstructural analysis.
- Derailment investigation and accident reconstruction, including participation on 24-hour on call derailment investigation team.
- Material characterization using advanced techniques and tools, including scanning electron microscopy (SEM), transmission electron microscopy (TEM), Fourier transform infrared (FTIR) spectroscopy, optical emission spectroscopy (OES), and energy dispersive spectroscopy (EDS).
- Design and design analysis using traditional methods as well as computer aided design (CAD) and finite element analysis (FEA).
- Deformation and thermal process analysis using FEA software capable of simulating plastic deformation processes such as hot and cold forming, forging, heat treatment, and grain refinement processes.
- Vehicle dynamic performance analysis using and developing interface software for VAMPIRE™.
- Developed and managed a technical quality management system (QMS) to obtain ISO 17025 accreditation.
- Local compliance officer (LCO) and laboratory quality manager (QM).

Materials Science Lab, Washington University in St. Louis **St. Louis, Missouri**
Research Assistant *Summer 2003- June 2006*

Performed a wide range of research and teaching duties in the university Materials Science lab.
Responsibilities:

- Performed material property tests, including tensile, charpy, and micro-hardness, on various materials.
- Performed microstructural analysis on a wide range of materials, including titanium alloys and shape memory alloys.
- Tested and critiqued differing Equal Channel Angular Extrusion (ECAE) strengthening techniques for use in strengthening titanium alloys to be used in jet engine turbine blades.
- Designed and built a water-cooled vacuum chamber for high-temperature ECAE of titanium aluminides.
- Designed and heat-treated superalloy dies for ECAE processing.
- Utilized finite element software to simulate and test ECAE processing parameters.
- Worked as teaching assistant for both undergraduate and graduate Materials Science and Mechanical Engineering courses.
- Performed material characterization using various instruments, such as DSC, SEM, TEM, and XRD.

Centrifugal and Mechanical Industries, Inc. **St. Louis, Missouri**
Engineering Intern *Summer 2002*

Worked independently on 3-D computer modeling and design projects for a leading coal centrifuge manufacturer.
Responsibilities:

- Used Solid Works™ to model coal centrifuge parts, assemblies, and fasteners.
- Created customized parts libraries and part, assembly, and drafting file templates.
- Aided in installation and organization of company computer network.
- Assisted with research and development, including testing of innovative centrifuge designs.

Professional Organizations

- American Society of Materials International (ASM)
- American Railway Engineering and Maintenance-of-Way Association (AREMA)
  - Rail (Chapter 2) Committee member
- American Welding Society (AWS)
- American Society of Mechanical Engineers (ASME)
- National Academy of Forensic Engineers (NAFE)
- National Society of Professional Engineers (NSPE)
- Nebraska Society of Professional Engineers (NeSPE)
- Pennsylvania Society of Professional Engineers (PSPE)*
  - Beaver County chapter past president; currently inactive

Professional Publications

- Brett Pond and Thomas Harris, "The Importance of Shear Testing in Process Design, Quality Control," Quality Magazine, February 2012, 12-13.