



HERRERA, STAFFORD & ASSOCIATES

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Christopher M. Bradley, Ph.D.

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Associate Engineer

Herrera, Stafford & Associates, El Paso, TX

5/2006 to Present

- Perform and conduct failure investigations and material characterization.
- Exposure to a variety of steel and stainless steel components used in oil and gas industry.
- Exposure to variety of aluminum, copper and brass alloys.
- Exposure to various superalloys used in turbine industry.
- Exposure to tensile and compression, hardness, Charpy V-notch tests, heat treating, and metallography including in-situ metallography.
- OES, SEM, EDS, XRF and optical microscopy.

Engineer Internship

National Aeronautics and Space Administration (NASA), Houston, TX

5/2011 to 8/2011

- Friction stir welding, microstructural and mechanical characterization and testing of 2195 aluminum.
- Metallurgical evaluation of 6061-T6 plug welds.
- Mechanical and material evaluation of additive manufacturing (AM) parts using LENS and EBF³ manufacturing techniques of titanium alloy (Ti-6-4).
- Failure investigation for the susceptibility of MP159 friction stir weld pins to liquid metal embrittlement during friction stir weld processes
- Field metallurgy using XRF and piezoelectric microhardness equipment to determine material specifications.

Graduate Research Associate

Center for Space Exploration Technology Research (cSETR)

2009 to 2013

- Deposition of nanostructured thermal barrier coatings using RF magnetron sputtering technique used for turbine applications.
- Deposition of thermal barrier coatings by thermal spray application for use in rocket applications, specifically thrust chambers.
- Microstructural characterization and analysis using SEM and X-Ray diffraction (XRD) before and after thermal cycling process.
- Cross-section analysis using optical and SEM/EDS mapping techniques before and after thermal testing.

Research and Teaching Assistant

The University of Texas at El Paso (UTEP)

2006-2013

- Performed an analysis investigation on aluminum cross-head shoe of a large compressor that failed in service.
- Sample preparation such as polishing and etching for photomicrographs of the surface.
- Performed scanning electron microscopy (SEM) and finite element analysis (FEA).

Education

Doctor of Philosophy - Environmental Science Engineering (Energy Track) 5/2013

The University of Texas at El Paso

- Dissertation: Thermal Barrier Coatings (TBC's) for High Heat Flux Thrust Chambers
- GPA: 3.9/4.0

Masters of Science - Metallurgical and Materials Engineering 8/2009

The University of Texas at El Paso

- Thesis: Microstructural Characterization and Heat Treatment of A286 Turbine Buckets
- GPA: 3.7/4.0

Bachelors of Science - Metallurgical and Materials Engineering 5/2006

The University of Texas at El Paso

- Major GPA: 3.4/4.0

Affiliations (Current and Past)

The Metals, Minerals, and Materials Society (TMS)

Alpha Sigma Mu (ASM)

Publications and Conferences

- C. M. Bradley, A. R. Choudhuri, C. V. Ramana, "Thermal Barrier Coatings (TBC's) for High Heat Flux Thrust Chambers", 3rd Southwest Energy Science Engineering Symposium (SESES), El Paso, TX, 2013.
- C. M. Bradley, "Thermal Barrier Coatings (TBC's) for High Heat Flux Thrust Chambers", 2nd Southwest Energy Science Engineering Symposium (SESES), El Paso, TX, 2012.
- C. M. Bradley, "Thermal Barrier Coatings (TBC's)", 1st Southwest Energy Science Engineering Symposium (SESES), El Paso, TX, 2011.
- M. Noor-A-Alam, C. K. Roy, C. M. Bradley, A. R. Choudhuri, C. V. Ramana, "Development of Hafnia-based Thermal Barrier Coatings and Its Microstructural Analysis", TMS Annual Meeting and Exhibition, February-March 2011, San Diego, CA.
- M. Noor-A-Alam, C. K. Roy, C. M. Bradley, A. R. Choudhuri, C. V. Ramana, "Growth and Microstructural Analysis of Hafnia-based Nanostructured Coatings" AVS 57th International Symposium & Exhibition, October 17-22 2010, Albuquerque, NM.