



HERRERA, STAFFORD & ASSOCIATES

8645 RAILROAD DR. EL PASO, TEXAS 79904

WWW.HSAENGINEERS.COM

Brenda I. Machado, Ph.D.

(915) 630-6404

machado@hsaengineers.com

Associate Engineer

Herrera, Stafford and Associates, El Paso, TX

04/2010 to Present

- Manage the electron microscope (EM) coupon program which monitors corrosion in the natural gas pipeline industry
- Analyze steel surfaces exposed to natural gas environments and obtain relevant information for corrosion control.
- Skilled in optical metallography, Scanning/Transmission Electron Microscopy, Energy Dispersive X-ray Spectroscopy (EDS), X-ray Fluorescence (XRF) and Nondestructive Testing (NDE).

Graduate Research Assistant

The University of Texas at El Paso, El Paso, TX

03/2009 to 03/2010

- Worked on different projects involving additive manufacturing to fabricate cellular structures from titanium and copper and performed transition electron microscope (TEM) on different materials like low-temperature nanoparticles.

Intern Metallurgical Engineer

El Paso Corporation, El Paso, TX

03/2007 to 02/2009

- Worked as an intern student organizing data into selected databases and performing failure analysis.
- Evaluated different failed components such as sections of pipelines, thermo-wells, and turbines.
- Wrote a significant amount of failure analysis reports.
- Assisted with characterization of corrosion coupons.

Undergraduate Research Assistant

The University of Texas at El Paso, El Paso, TX

08/2006 to 05/2007

- Worked with the Assistant Dean of the College of Engineering providing assistance with the ABET accreditation for the College of Engineering.
- Assisted various professors with grading; specifically in the Introduction to Engineering Course.

Faculty and Student Team Intern (FaST)

Argonne National Laboratories, Argonne, IL

05/2006 to 08/2006

- Worked in a team environment with fellow Argonne Scientists in different group projects.
- Characterized chromium superalloys for high temperature applications.
- Used techniques such as scanning electron microscopy (SEM), energy dispersive x-ray spectroscopy (EDS) and metallography.
- Evaluated oxidation performance of ternary alloys.

Adult Tutor Aide

Beall Elementary School, El Paso, TX

08/2001 to 05/2007

- Worked with children from 1st to 5th grade to help improve their reading and second language skills (Spanish), tutored for TAKS 3rd grade students and assisted with book inventory in the library.

Education

Doctor of Philosophy - Materials Science and Engineering

12/2011

University of Texas at El Paso

- Dissertation: Ballistic projectile metallurgical issues and fundamentals: Aerosol production in rod penetration erosion and erosion phenomena associated with railgun development
- GPA: 4.0/4.0

Masters of Science - Metallurgical and Materials Engineering

12/2009

University of Texas at El Paso

- Thesis: Characterization and cytotoxic assessment of ballistic aerosolized particulates for tungsten alloy penetrators interacting with steel targets
- GPA: 3.76/4.0

Bachelors of Science - Metallurgical and Materials Engineering

05/2007

University of Texas at El Paso

Selected Professional Publications

- Machado B.I., Murr L.E., Suro R.M., Gaytan S.M., Ramirez D.A., Garza K.M., Schuster B.E. Characterization and Cytotoxic Assessment of Ballistic Aerosol Particulates for Tungsten Alloy Penetrators into Steel Target Plates. Int J Environ Res Public Health. 2010 September; 7(9): 3313–3331.
- Murr L.E., Gaytan S.M., Ceylan A., Martinez E., Martinez J.L., Hernandez D.H., Machado B.I., Ramirez D.A., Medina F., Collins S., Wicker R.B. Characterization of titanium aluminide alloy components fabricated by additive manufacturing using electron beam melting. Acta Materialia, Volume 58, Issue 5, March 2010, Pages 1887-1894.
- Tackett R.J., Parsons J.G., Machado B.I., Gaytan S.M., Murr L.E., Botez C.E. Evidence of low-temperature superparamagnetism in Mn₃O₄ nanoparticle ensembles. Nanotechnology. 2010 Sep 10;21(36):365703.
- Ramirez D.A., Murr L.E., Li S.J., Tian Y.X., Martinez E., Martinez J.L., Machado B.I., Gaytan S.M., Medina F., Wicker R.B. Open-cellular copper structures fabricated by additive manufacturing using electron beam melting, Materials Science and Engineering: A, Volume 528, Issues 16–17, 25 June 2011, Pages 5379-5386.

Honors and Professional Affiliations (Current and Past)

- NACME Scholarship
- UTEP President's Leadership Award Scholar
- UTEP College of Engineering Dean's List
- Phelps Dodge Graduate Scholarship
- Tau Beta Pi Engineering Honor Society
- The Minerals, Metals and Materials Society (TMS)
- Alpha Sigma Mu Metallurgical and Materials Engineering Honor Society
- American Foundry Society (AFS)

Skills

- Fully bilingual in Spanish