

Joshua B. Caris

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Education

Case Western Reserve University, Cleveland, OH

Ph.D. - Materials Science and Engineering (August, 2007)

M.S. - Materials Science and Engineering: 3.7 (August, 2003)

B.S. - Materials Science and Engineering: *Magna Cum Laude* 3.6 (May, 2002)

Selected Coursework

Phase Diagrams and Transformations

Fracture Mechanics

Thermodynamics

LASERS

Transport Phenomena

TEM, SEM, X-Ray, Auger, XEDS, XPS

Failure Analysis

Nanotechnology

Dielectric, Magnetic, and Optical Properties of Materials

Condensed Matter Physics, Crystallography

Ph.D. Thesis Topic

“Heat Treatment Effects on Cu-15Ni-8Sn Produced via Powder Metallurgy”

Advisor: Professor John J. Lewandowski

Co-advisor: Dr. John J. Stephens (Sandia National Laboratories)

This dissertation was completed in conjunction with Sandia National Laboratories and the National Physical Sciences Consortium (NPSC). My research is focused on determining the effects of microstructural changes on the mechanical properties of spinodally decomposed Cu-15Ni-8Sn.

Other Experience

Masters Thesis Research, Case Western Reserve University (8/03)

“Evaluation of AS800 Silicon Nitride Braze Joints Using Ag-2%Zr and Ag-3.45%Hf as Active Braze Metals” (with advisors J. Lewandowski and J. Stephens)

Senior Thesis, Case Western Reserve University (5/02)

“Effects of Devitrification on the Mechanical Properties of Al-Gd-Ni Metallic Glass Ribbons”

Sandia National Laboratories, Albuquerque, NM,

Summer Internship: 2001, '02, '03, '04, '05, and '06

Participated in research with Dr. John Stephens Jr. and Dr. Donald Susan investigating the viability of braze alloys for use in ceramic-ceramic and ceramic-metal joining systems. Metallography, mechanical testing (creep, tensile, and hardness), and electron dispersive techniques were utilized. Assisted Dr. Luke Brewer with EBSD and mechanical evaluation of lead-based and lead-free solder alloys.

FOSECO Inc., Cleveland, OH, Spring Semester 2001 Internship

Assisted with measurement of mechanical, physical, and chemical properties of riser sleeve products. Conducted casting trials and assessed refractoriness in the evaluation of riser sleeves.

H.C. Starck (Formerly CSM Industries), Cleveland, OH, Summer 2000 Internship
Conducted mechanical and metallurgical testing of a dispersion strengthened molybdenum alloy to assess its creep properties. (Supervisor - Dr. John Shields)

H.C. Starck (Formerly CSM Industries), Cleveland, OH, Spring / Summer 1999 Co-Op
Conducted mechanical and metallurgical testing of pack rolled tungsten sheets to extend production dimensions for rolling facilities. (Supervisor - Dr. Gary Rozak)

Case Western Reserve University, Cleveland, OH; Spring Semester 1998 – Spring 2002
Educational Support Services Master Tutor/Individual Tutor
Introductory Engineering, Chemistry, Calculus, and Physics Courses

Technical Skills

Familiar with TEM, SEM, EBSD, energy dispersive and optical microscopy techniques
Mechanical testing including tensile, bend, creep, and hardness tests and methods
Metallography and sample preparation
Basic knowledge of programming in C++, Linux platform programs

Activities

Joint Student Member, American Society of Materials/The Materials Society (ASM/TMS)
CWRU Graduate Materials Society, Secretary
CWRU Graduate Student Senator
Graduate Teaching Assistant
EMSE 421: Fracture of Materials (Fall 2006)
EMSE 413: Fundamentals of Materials Science and Engineering (Fall 2004)*
EMSE 290: Materials Laboratory III (Spring 2003)
ENGR 225: Thermodynamics, Fluids, Heat and Mass Transport (Fall 2002)

Honors

Case Prime Graduate Fellowship
National Physical Sciences Consortium Graduate Fellowship
Outstanding Graduate Teaching Assistant 2005*
Case Alumni Scholarship
Van Horn Scholarship for Materials Science and Engineering
CWRU Provost's Scholarship for Undergraduates
Dean's High Honors

Presentations

1. J. Caris, J.J. Lewandowski, and J.J. Stephens Jr. "Mechanical Properties of Cu-15Ni-8Sn after Thermal Excursion" Spring 2006 TMS Conference; Orlando, FL; Feb. 25, 2007
2. J. Caris, J.J. Lewandowski, and J.J. Stephens Jr. "High Strength Cu-Ni-Sn Alloy for Electrical Connector Applications" Fall 2006 MS&T Conference; Cincinnati, OH; Oct. 15, 2006.
3. J. Caris, D. Li, J.J. Lewandowski, and J.J. Stephens Jr. "Heat Treatment Effects on Structure Evolution and Mechanical Properties of Cu-15Ni-8Sn" Research ShowCASE; Cleveland, OH; April 11, 2007.
4. J. Caris, J. J. Lewandowski, and J. J. Stephens Jr. "Evaluation of AS800 Silicon Nitride Braze Joints Using Ag-2%Zr and Ag-3.45%Hf as Active Braze Metals" Spring 2004 TMS Annual Meeting; Charlotte, NC; March 14, 2004.

Publications

L. Wei, H. Gilley, and J. Caris "Finding the Surface Temperature of the Sun Using a Parked Car", Am. J. of Phys. Vol. 65, No. 11, 1105-1109 (1997).