

**Preston Scarber, Jr., Ph.D., P.E.**  
**Technical Resume**

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**Contact Information:**

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**Company**

**Vista Engineering & Consulting, LLC**

**Work Phone**

**205-307-6550**

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**Education:**

Ph.D. Materials Engineering, the University of Alabama at Birmingham, 1998

Dissertation Title: “*Finite Element Modeling of Particle Cracking in Metal Matrix Composites*”

M.S. Materials Engineering, the University of Alabama at Birmingham, 1995

B.S. Materials Engineering, the University of Alabama at Birmingham, 1992

**Training:**

Human Factors for Traffic Reconstruction – November 2017

National Expert Witness Conference – May 2017

Forensic Science and Metrology International Educational Conference – November 2016

3D Forensics and Crash Seminar – May 2016

Faro Reality Forensics Training – May 2016

Motor Vehicle Accident Reconstruction and Cause Analysis - MARC1 - 2016 Seminar-Apr 2016

Advanced Crash Investigation-Institute of Police Technology & Management (IPTM)-June 2015

International Association of Forensic & Security Metrology Conference - November 2014

At-Scene Traffic Crash/Traffic Homicide Investigation, IPTM - November 2014

Excel in Accident Reconstruction - January 2014

Faro 3D Laser Scanner Training - November 2013

ARC-CSI Conference - May 2012

Qualified CDR Technician - March 2012

HVE Advanced Users' Conference - February 2011

South Carolina Accident Reconstructionist Society Conference - August 2010

**Summary of Professional Accomplishments**

Developed a method for accurately simulating shrinkage porosity in Al-Si casting alloys.

Developed a thermo-physical properties database for more accurate simulation of Al Si alloys.

Developed a method for simulating the rate and volume of gas produced when liquid metal contacts bonded sand.

Improved the accuracy of lost foam casting simulation through collaboration with commercial code-writers.

Co-developed basic gating rules for lost foam castings.

Developed a method to simulate foam pattern irregularities for more accurate prediction of anomalies in lost foam castings.

Developed a method to quantify the filling behavior of gating systems for open cavity castings.

Worked with over 35 companies in both public and proprietary simulation studies to reduce casting anomalies and scrap with a total estimated energy savings of more than \$13 million.

### **Professional Experience:**

Failure analysis engineering at Vista Engineering & Consulting LLC, 2009 – Present. Duties include product analysis, materials failure analysis, presentation of analysis, testimony.

Graduate Engineer/Accident Reconstructionist at VEAR, Inc., 2009 - Present. Duties include computer simulation of vehicular accidents; mathematical verification of forensic evidence; failure analysis, presentation of analysis, testimony.

Research Engineer at the University of Alabama at Birmingham (UAB) Department of Materials Science and Engineering, 2001 - 2009. Duties included: collaborating with industry and simulation software producers to increase accuracy and usefulness of materials process simulation for reduced energy consumption; manage graduate and undergraduate student labor; discover new research capabilities that would augment the group's casting research; publish research results in scientific journals; present research findings at conferences and meetings; maintain the group's web site.

Postdoctoral Fellow at the University of Alabama at Birmingham Department of Materials and Mechanical Engineering, 1998 - 2001. Duties included: developing ability to simulate casting processes; publish research results in scientific journals; present research findings at conferences and meetings.

### **Membership in Professional Societies:**

National Society of Professional Engineers

National Association of Professional Accident Reconstruction Specialists, Inc.

ASM International – Birmingham chapter “10-14” coordinator

National Society of Black Engineers

American Foundry Society

### **Professional Registration:**

Registered Professional Engineer in Alabama and Mississippi

### **Participation in Technical Committees:**

American Foundry Society Division 1-F: Process Modeling

American Foundry Society Division 1A/B: Engineering  
American Foundry Society Division 13: Lost Foam Casting Research  
Steel Founders' Society of America: Gating for Clean Steel Castings

### Awards and Honors:

American Foundry Society Outstanding Service Award – Division 11 (2008)  
American Foundry Society Best Paper – Engineering (2007)  
University of Alabama at Birmingham National Alumni Society Outstanding  
Young Alumnus of the Year (2004)

### Publications:

1. P. Scarber, Jr., “Modified Graphitic Iron – Now What?” Ductile Iron Society Keith Millis Symposium – Keynote Address, AFS 2008.
2. P. Scarber, Jr. and H. Littleton, “Simulating Macro-Porosity in Aluminum Lost Foam Castings”, AFS 2008.
3. P. Scarber, Jr. and C.E. Bates, “Simulation of Core Gas Production During Mold Fill”, AFS 2006.
4. P. Scarber, Jr., C.E. Bates, and J. Griffin, “Effects of Mold and Binder Formulations on Gas Evolution When Pouring Aluminum Castings”, AFS 2006.
5. P. Scarber, Jr., “Gaseous Defects in Castings”, Foundry Management and Technology, 2005.
6. P. Scarber, Jr. and W. Sun, “Watching Defects Form”, Ductile Iron Society Technical and Operators Conference, 2003.
7. P. Scarber, Jr., “Using Gating Design to Minimize and Localize Reoxidation”, SFSA Technical and Operating Conference, October 2002.
8. P. Scarber, Jr., “The Effect of Gating and Pouring Practice on Reoxidation in Steel Castings”, SFSA Technical and Operating Conference, October 2001.
9. P. Scarber, Jr. and G.M. Janowski: “Finite Element Analysis of Reinforcement Particle Cracking in Al/SiC<sub>p</sub> Composites”, Materials Science and Technology, October 2001.
10. P. Scarber, Jr., “Computer-Based Simulations of Liquid Metal Alloy Interactions with Air During Mold Fill of Castings”, *accepted for publication in International Journal of Cast Metals Research, 2001.*
11. P. Scarber, Jr., “Using Liquid Free Surface Area as a Predictor of Reoxidation Tendency in Metal Alloy Castings”, SFSA Technical and Operating Conference, October 2000.
12. P. Scarber, Jr., “Gating Design in Steel Castings”, SFSA Technical and Operating Conference, November 1999.
13. P. Scarber, Jr. and G.M. Janowski: “The Effects of Reinforcement Shape and Volume Fraction on Residual Stress and Particle Cracking in Al/SiC<sub>p</sub> Composites”, *Modeling and Composites: Properties and Processing*, Edited by Shao Ping Chen and Michael Paul Anderson, TMS-AIME, 1996, pp. 57-75.
14. P. Scarber, Jr. and G.M. Janowski: “The Effect of Reinforcement Particle Cracking on the Matrix Stress and Strain Behavior in Al/SiC<sub>p</sub> Composites”, *in preparation for Materials Science and Technology.*

15. P. Scarber, Jr. and G.M. Janowski: "Finite Element Analysis of the Stress and Strain Distribution in Al/SiC<sub>p</sub> Composites", *in preparation for Metallurgical Transactions B*.
16. Robin D. Griffin, Preston Scarber, Jr., Gregg M. Janowski, and Charles E. Bates: "Quantitative Characterization of Graphite in Cast Iron," *A.F.S. Transactions*, vol. 96-129, 1996, pp. 977-983.