



## CENTER FOR ADVANCED VEHICULAR SYSTEMS

Bagley College of Engineering at Mississippi State University

### **FY08** **Second Quarter Report**

1 October 2007 to 31 December 2007

## EXECUTIVE SUMMARY

From Director, Rand M. German

In the second quarter of the 2008 academic year, CAVS has moved into a steady-state mode as evident by the graduation of several students, completion of seven “initiative” projects, and placement of six staff into senior management or tenure-track positions. With the program maturation CAVS is focusing on research and development projects to better match its mission as an interdisciplinary center that provides team-based solutions for complex issues associated with human mobility. During the second quarter of academic year 2008 (October – December), CAVS faculty and staff’s proposal activity included 10 awards totaling \$2,097,479 and 2 continuation awards totaling \$38,000. This gave a net award inflow of \$2,135,479 while CAVS had a net expenditure of \$5,233,131.

CAVS research participation for the quarter included:

- 10 academic faculty
- 25 research associates
- 11 postdoctoral fellows
- 47 graduate students
- 57 undergraduate students
- 12 staff

Highlights from the detailed listing given below include the following:

- 24 proposals, totaling \$4,726,261 were submitted for future funding
- CAVS staff submitted 13 articles for publication and 4 conference submissions
- During the same time CAVS was responsible for
  - 35 published articles
  - 6 presentations
  - 1 new patent disclosure

• The following PI’s and Co-PI’s submitted proposals:

Arockiasamy, Antonyraj -	2	Bammann, Doug -	1	Bouvard, Jean Luc -	2
Coltharp, Dave -	2	Crocker, Marshall -	2	Dennis, G. -	1
El Kadiri, Haitham -	1	Felicelli, Sergio -	1	German, Rand -	1
Groh, Sebastien -	1	Haupt, Tomasz -	1	Horstemeyer, Mark -	5
Hwang, Youngkeun -	1	Marin, Esteban -	1	Mazzola, Mike -	3
McGinley, John -	1	Molen, Marshall -	2	Oglesby, David -	1
Park, Seong Jin -	3	Reeves, Wes -	2	Rhee, Hongjoo -	1
Rowland, Zach -	1	Sheely, R. -	2	Suri, Pavan -	3
Tian, Guoyun -	1	Walden, C. -	1	Wang, Liang -	1
Wang, Paul -	1	Williams, Lakiesha -	1	Xue, Anna -	3

## I. Accomplishments

### A. Grants and Proposals

#### 1. Submitted Proposals Awarded – Totaling \$2,097,479

- “Development of a Business Continuity and Risk Planning Tool, Phase II,” S. Puryear, C. Walden, Mississippi Technology Alliance, \$14,985.
- “Development Material Database & Modeling High-Rate Material Response for Impact Applications – TCN 07176,” P. Gullett, Battelle, \$720,872.
- “Finite Element Analysis of the Plastic J-Bracket Used in the ZW Vertical Back Glass of a Nissan Vehicle,” P. Wang, E. Marin, US Small Business Administration, \$12,065.
- “Kaizen Event to Improve Throughput at Gipson Steel, Inc.,” R. Sheely, C. Walden, Mississippi Extension Program of Mississippi (MEP.ms), Mississippi Technology Alliance, \$8,000.00.
- “Materials Database & Model Development for Polymeric Materials – TCN 07190,” E. Marin, M. Horstemeyer, Battelle, \$700,833.
- “Mississippi Active Shooter Training Evaluation (MASTE),” D. Carruth, US Department of Justice, \$70,724.
- “Planning Study to Develop a Strategy for the Development of Best Available Technology for Atlas Manufacturing,” R. Sheely, C. Walden, Atlas Manufacturing, \$2,000.
- “Planning Study to Develop a Strategy for the Development of Best Available Technology for Atlas Manufacturing,” R. Sheely, C. Walden, Mississippi Technology Alliance, \$8,000.
- “Simulation & Characterization of Biologically Inspired Materials – TCN 07173,” M. Horstemeyer, H. El Kadiri, P. Wang, L. Williams, Battelle, \$420,000.
- “Virtual Organization for Cyber Design,” M. Horstemeyer, T. Haupt, National Science Foundation, \$140,000.

#### 2. Continuations – Totaling \$38,000

- “Challenge X: Crossover to Sustainable Mobility,” M. Molen, General Motors R&D Center, \$5,000.
- “Challenge X: Crossover to Sustainable Mobility,” M. Molen, General Motors R&D Center, \$33,000.

### B. Publications

#### Book or Book Chapter

- “Toz Metalurjisi ve Parcacikli Malzeme Islemleri,” R. German, *Toz Metalurjisi ve Parcacikli Malzeme Islemleri*, TTMO, In S. Saritas, M. Turker, N. Durlu, 2007.

#### Articles in Trade Journals and Popular Press

- “Metal Powder Injection Molding of Copper and Copper Alloys for Microelectronic Heat Dissipation,” R. German, J. Johnson, *International Journal of Power Metallurgy*, 2007, 43(5), 55-63.
- “Parking and Packing Problems in Particulate Materials Processing,” R. German, *Powder Metallurgy*, 2007, 50, 260-270.
- “Powder Injection Molding in North America - Upbeat Again,” R. German, *Power Injection Moulding International*, 2007, 1(3), 25-31.
- “R&D in Support of Powder Injection Molding: Status and Projections,” R. German, *International Journal of Power Metallurgy*, 2007, 43(6), 47-57.

### Peer-Reviewed Journals

- “Damage and Stress State Influence on the Bauschinger Effect in Aluminum Alloys,” J.B. Jordon, M. Horstemeyer, K. Solanki, Y. Xue, *Mechanics of Material*, 2007, 39, 920-931.
- “Development of Novel Industrial Laminated Planks from Sweetgum Lumber,” R. Shmulsky, S. Shi, *ASCE Journal of Bridge Engineering*, 2007, 13(1), 64-66.
- “Diffusion Model Based on Fick’s Second Law for the Moisture Absorption Process in Wood Fiber-based Composites: Is it Suitable or Not?,” S. Shi, *Wood Science and Technology*, 2007, 41(8), 645-658.
- “Dynamic Load Balancing With Adaptive Factoring Methods in Scientific Applications,” R. Carino, I. Banicescu, *Journal of Supercomputing*, Springer, In Hamid R. Arabnia, (<http://dx.doi.org/10.1007/s11227-00709148-y>), 2007.
- “Effect of the Thermal Treatment of Wood Lumbers on Adhesive Bond Strength and Durability,” S. Poncsak, S. Shi, D. Kocafe, G. Miller, *Journal of Adhesion Science*, 2007, 21(8), 745-754.
- “Metal Powder Injection Molding of Copper and Copper Alloys for Microelectronic Heat Dissipation,” R. German, J. Johnson, *International Journal of Powder Metallurgy*, 2007, 43(5), 55-63.
- “Process Modeling in Laser Deposition of Multilayer SS410 Steel,” L. Wang, S. Felicelli, *Journal of Manufacturing Science and Engineering*, 2007, 129(6), 1028-1034.
- “Structure of AlSb(001) and GaSb (001) Surfaces Under Extreme Sb-rich Conditions,” J. Houze, S. Kim, S. Erwin, L. Whitman, *Physical Review B*, 2007, 76(20), 205303.

### Peer-Reviewed Conference Papers

- “Flexural Moduli of Vapor-grown Carbon Nanofiber/Wood Flour/Polypropylene Composites,” C. Pittman, J. Shi, J. Zhang, H. Toghiani, Y. Xue, *9th International Conference on Wood & Biofiber Plastic Composites, May 21-23, 2007, Madison WI, Madison, WA: Forest Products Society, INSB 1-892529-50-5*, 95-106.
- “High-Temp Static and Dynamic Reliability Study of 4H-SiC Vertical-Channel JFETs for High-Power System Applications,” L. Cheng, P. Martin, M. Mazzola, M. Rais-Rohani, R. Kelly, V. Bondarenko, S. Morrison, R.Gray, G. Tian, J. Scofield, J. Casady, J. Casady, *Silicon Carbide and Related Materials 2007*, Otsu, Japan, 2007.
- “High-Temperature Static and Dynamic Reliability Study of 4H-SiC Vertical-Channel JFETs for High-Power System Applications,” L. Cheng, P. Martin, M. Mazzola, R. Kelly, V. Bondarenko, J. Scofield, M. Rais-Rohani, J. Casady, J. Casady, *Silicon Carbide and Related Materials 2007*, Otsu, Japan, 2007.
- “Micromechanical Simulation on Hygro-Mechanical Properties of Woodfiber-Reinforced Plastic Composites,” Y. Xue, H. Zhang, M. Horstemeyer, *9th International Conference on Wood & Biofiber Plastic Composites, May 21-23, 2007, Madison WI, ISBN 1-892529-50-5*, 2007, 339-346.
- “Parking and Packing Problems in Particulate Materials Processing,” R. German, In *Powder Metallurgy*, 2007, 50, 260-270.
- “Pilot Expertise and Instrument Failure: Detecting Failure,” R. Brou, S. Doane, D. Carruth, G. Bradshaw, *Proceedings of the 51st Annual Meeting of the Human Factors and Ergonomics Society*, Baltimore, MA, 2007.
- “Powder Injection Molding in North America - Upbeat Again,” R. German, Toulouse, France, In *Powder Injection Moulding International 2007*, 2007, 1(3), 25-31.
- “Rapid Prototyping Capabilities for Conducting Research of Sun-Earth System,” T. Haupt, A. Kalyanasundaram, I. Zhuk, 3rd IEEE International Conference on e-Science and Grid Computing, Bangalore, India, 2007.

- “Statistical Tensile Properties of Kenaf Fibers and Composites,” Y. Xue, Y. Du, S. Elder, M. Horstemeyer, J. Zhang, *9th International Conference on Wood & Biofiber Plastic Composites, May 21-23, 2007, Madison WI*, Madison, WA: Forest Products Society, ISBN 1-892529-50-5, 2007, 161-168.

#### **Peer-Reviewed Conference Abstracts**

- “Cyberinfrastructure for Rapid Prototyping Capability,” T. Haupt, A. Kalyanasundaram, I. Zhuk, *American Geophysical Union annual meeting 2007*, San Francisco, CA, 2007.
- “Microstructure and Mechanical Properties of Sponge Ti and Its Alloy Powders with Various Powder Metallurgical Processes,” H. El Kadiri, W. Peter, R. Whitehorn, S.J. Park, Y. Hammi, R. German, New Orleans, Louisiana, In 2008 TMS Annual Meeting & Exhibition, 2007.

#### **Peer-Reviewed Conference Posters**

- “Microstructure-Property Characterization of a Dodge Neon Passenger Car,” M. Horstemeyer, K. Solanki, C. Burton, *Materials Science and Technology 2007 – Detroit, MI*, 2007.

#### **MSU Thesis and Dissertation**

- “A Taxonomy Based Assessment Methodology for Small and Medium Size Manufacturers,” C. Walden, *Dissertation*, In Mississippi State University, 2007.
- “Tool Wear and Failure Mechanisms in Powder Metal Compaction,” J. Kyle Thompson, In Mississippi State University, 2007.
- “Development of Tungsten Carbide – Nickel Braze Alloy Hardface Coating,” Travis E. Puz, In Mississippi State University, 2007.

#### **Technical Report**

- “DOE/SRCLID Annual Report for Task 4,” M. Rais-Rohani, C. Eamon, E. Acar, A. Najafi, M. Rouhi, In Department of Energy, 2007.

#### **In-House**

- “Compare the Side Door Thickness Designs: Injury-based Design and Energy-absorb Design,” X. Ren, M. Horstemeyer, K. Solanki, P. Wang, *CAVS Report MSU.CAVS.CMD.2007-R0017*, 2007.
- “DOE/SRCLID FY 2006-2007,” M. Horstemeyer, D. Bammann, E. Marin, K. Solanki, S. Groh, X. Ren, *CAVS Report MSU.CAVS.CMD.2007-R0041*, 2007.
- “ImageAnalyzer - A Software Tool for Calculating Certain Material Model Constants from Optical Images,” R. Carino, *MSU.CAVS.CMD.2007-R0039*, 2007.
- “Lightweight Design of Automotive Structures for Crashworthiness Based on Robust Optimization,” M. Rais-Rohani, K. Solanki, E. Acar, C. Eamon, *CAVS Report MSU.CAVS.CMD.2007-R0022*, 2007.
- “Re-engineering DMGFIT – Fitting Material Constants to Internal State Variable Models,” R. Carino, M. Horstemeyer, C. Burton, *MSU.CAVS.CMD.2007-R0040*, 2007.
- “Reliability-Based Design Optimization Using a Physically Motivated Material Model,” K. Solanki, M. Rais-Rohani, E. Acar, C. Eamon, M. Horstemeyer, *CAVS Report MSU.CAVS.CMD.2007-R0023*, 2007.
- “Structural Size and Shape Optimization of “MAG-I-Beam” Drop Deck Trailer,” E. Acar, K. Solanki, M. Rais-Rohani, D. Oglesby, *CAVS Report*, Center for Advanced Vehicular Systems, 2007.

## C. Presentations

- “ADL E-Learning Summit - Bringing SCORM Sequencing to the “Little People”,” D. Brown, ADL Workforce Co-Laboratory in Memphis, TN, 2007.
- “ADL E-Learning Summit - Empowering the Trainer with an Intuitive Authoring Tool for Adaptive eLearning,” D. Brown, ADL Workforce Co-laboratory in Memphis, TN, 2007.
- “An Inverse Approach to Selection of Component Designs for Metal Powder Injection Molding,” R. German, *PM 2007 European Powder Metallurgy Association Conference*, Toulouse, France, 2007.
- “Lean Sigma Myth Buster: Introduction to Design of Experiments,” C. Walden, L. Goff, *High Tech Conference*, Mississippi TelCom Center, Jackson, MS: Mississippi Technology Alliance, In John J. Tice, 2007.
- “Lightweight Materials For Powder Metallurgy (P/M) Automotive Applications,” Y. Hammi, *Advanced Lightweight Material for Automotive 2007*, Marriott Dearborn Inn Hotel, Dearborn, MI, 2007.
- “Metal Powder Injection Molding,” R. German, Drivetrain Division -GKN, Auburn Hills, MI, November 2007.
- “Modeling of Materials Processes - The Difficult Problems with Particulates,” R. German, Keynote presentation, 50th Jubilee Celebration, International Conference on Advanced Manufacturing Technologies ICAMT-2007, Durgapur, Bengal, India, November 2007.
- “The Role of CAVS Extension in the Launch of International Military and Government Facility in West Point, MS,” G. Dennis, C. Walden, R. Sheely, *Downtown Jackson Rotary Club*, Jackson, MS, 2007.
- “Transient Liquid Phase Sintering,” R. German, Cookson Electronics Semiconductor Products, Suwanee, GA., November 2007.

## II. Activities

### A. Proposal Submissions

- “600-A, 175 Degree C SiC JFET Intelligent Power Module Research, Phase II – Tasks 1-3,” M. Molen, M. Mazzola, UQM Technologies, Inc.
- “600-A, 175 Degree C SiC JFET Intelligent Power Module Research, Phase II – Tasks 4-6,” M. Molen, M. Mazzola, UQM Technologies, Inc.
- “Advanced Naval Power Systems through Electric Ship Systems Research & Development Proposal,” T. Haupt, Florida State University.
- “Development of Corrosion Resistant Aluminum Alloys,” A. Arockiasamy, P. Suri, NineSigma.
- “Development of High Performance W-Cu Composites by Powder Metallurgy Route,” S.J. Park, US-Egypt Joint Science & Technology Board.
- “Effect of Adhesive Joints on the Fire Performance of Wood I-Joist,” A. Xue, Department of Commerce – NIST.
- “Field-Validated Computational Geodynamics of the Westernmost Alpine-Perimediterranean Belt,” M. Horstemeyer, H. El Kadiri, National Science Foundation.
- “Finite Element Analysis of an Aircraft Seat Back,” D. Oglesby, Waltonen Engineering.
- “Innovative Substrate Design for Automotive Electronics: Functional, High Thermal Conductivity Substrates for Inverter-Converter Assembly in Hybrid Vehicles,” P. Suri, G. Tian, R. German, M. Mazzola.
- “Intelligent Transportation Advanced Warning System,” M. Crocker, W. Reeves, National Transportation Research Center.
- “Investigation of Bake Hardening Effects of Dual Phase Investigation on Corrosion Reduction Additive for Aqueous Quarternary Polymer,” A. Arockiasamy, P. Suri, NineSigma.

- “Kaizen Event to Improve Throughput at Gipson Steel, Inc.,” R. Sheely, C. Walden, Gipson Steel, Inc.
- “Light-weight, High-strength Titanium Nano Composite via Powder Injection Molding,” S.J. Park, IAP Research, Inc.
- “Manufacturing Support for Continuing Manufacturing Plan (CMP) and Prototype Build in the West Point Facility – Amendment #2,” G. Dennis, International Military and Government.
- “Mississippi Automotive Manufacturing Industry Impact Study: 2002-2007,” R. Sheely, Entergy Mississippi, Inc.
- “Modeling the Solidification Microstructure in Laser Deposition Processes,” S. Felicelli, L. Wang, National Science Foundation.
- “Multiscale Computational Modeling of the Plasticity in Magnesium: Bridging the Atomic Scale to the Dislocation Dynamics Crystal Plasticity Scale,” D. Bammann, S. Groh, National Science Foundation.
- “Navy Regional Antiterrorism Plan Template and Implementation,” D. Coltharp, Sentel.
- “NDE on Ballistic Resistance of Aging Soft-body Armor,” M. Horstemeyer, A. Xue, J.L. Bouvard, Y. Hwang, US Department of Justice.
- “Process-Structure-Property Relations of Injection Molded Polymer/Polymer Composites,” A. Xue, M. Horstemeyer, E. Marin, J.L. Bouvard, S.J. Park, American Chemistry Council – Plastics.
- “Structure-Property Characterization of a Turtle Shell for Developing a Design Methodology for Synthetic Counterpart Material Systems,” M. Horstemeyer, L. Williams, National Science Foundation.
- “Updating the Joint Antiterrorism Guide, Joint Forward Operations Base Handbook, & Joint Contingency Operations Base Handbook with New Protective Construction Technology & Risk Management Processes,” D. Coltharp, Sentel.
- “Using Expert Knowledge to Prevent Upper Extremity Injuries: Knowledge Transfer for Carpentry Tasks,” J. McGinley, NIOSH.
- “Vehicle Performance Monitoring System for MDOT Law Enforcement,” Z. Rowland, M. Crocker, W. Reeves, MS Department of Transportation.

## **B. Publication Submissions**

### **Peer-Reviewed Journals**

- “A Simple Model for Moisture Absorption Process in Wood-based Composite and Wood-polymer Composites under Water Vapor Conditions,” S. Shi, *Wood Science and Technology*.
- “Contact and Friction of Single Crystal Nickel Nanoparticles Using Molecular Dynamics,” T. Stone, M. Horstemeyer, Y. Hammi, P. Gullett, *Acta Materialia*.
- “Improving Accuracy of Vehicle Crashworthiness Response Predictions using Ensemble of Metamodels,” E. Acar, K. Solanki, *International Journal of Crashworthiness*.
- “Influence of Surface Morphology of the Kraft Pulp Fibers on the Growth of the Transcrystalline Layer of Polypropylene,” B. Lee, S. Lee, B. Via, S. Shi, *Holzforchung*.
- “Investigation of Sintering Behavior and Mechanical Properties of Al P/M Alloys by the Addition of Cu and Mg,” F. Findik, A. Antonyraj, S.J. Park, R. German, *Powder Technology*.
- “Investigation of Sintering Behavior and Mechanical Properties of Al P/M Alloys by the Addition of Cu and Mg,” F. Findik, A. Antonyraj, S.J. Park, R. German, *Journal of Powder Metallurgy*.
- “Mechanical Properties of Sintered Aluminum Alloys Containing Si, Cu, Mg, Ti and SiC,” F. Findik, A. Antonyraj, S.J. Park, R. German, *Journal of Powder Metallurgy*.
- “Melting Tungsten Nanoparticles: A Molecular Dynamics Study,” A. Moitra, S. Kim, J. Houze, B. Jelinek, S.J. Park, R. German, M. Horstemeyer, S.G. Kim, *Journal of Physics D: Applied Physics*.
- “Micromechanical Simulation of Cyclic Plasticity at Inclusion Particles with Overloads,” Y. Xue, K. Solanki, M. Horstemeyer, *AIAA Journal*.

- “Modeling Moisture Absorption Process of Wood-based Composites under Over-saturated Moisture Conditions using Two-part Equations,” S. Shi, D. Wu, *Wood Science and Technology*.
- “Reliability-Based Crashworthiness Optimization of Automotive Structures,” M. Rais-Rohani, K. Solanki, E. Acar, C. Eamon, *Journal of Mechanical Design*, ASME.
- “Reliability-Based Structural Optimization using a Multiscale Material Model,” K. Solanki, E. Acar, M. Rais-Rohani, C. Eamon, M. Horstemeyer, *Computer Methods in Applied Mechanics and Engineering*.
- “Structural Analysis and Testing of an Ultralight UAV Carbon Composite Wing,” R. Sullivan, Y. Hwang, M. Rais-Rohani, T. Lacy, *AIAA, Journal of Aircraft*.

#### **Non-Refereed Conference Papers**

- “Development and Analysis of Bio-Inspired Design Aluminum Composites,” A. Antonyraj, P. Suri, R. German, Washington, DC.
- “Mechanical Properties of Various Aluminum Alloys by Powder Metallurgy,” A. Antonyraj, S.J. Park, R. German.
- “Multistage Fatigue Model on Viscoelastic Materials at Elevated Temperatures,” J.L. Bouvard, Y. Xue, M. Horstemeyer, D. Oglesby, Monterey CA: 6th International Conference on Mechanics of Time-Dependent Materials.

### **C. Accepted Works Awaiting Publication**

#### **Peer-Reviewed Journals**

- “Ensemble of Metamodels with Optimized Weight Factors,” E. Acar, M. Rais-Rohani, *Structural and Multidisciplinary Optimization*.
- “Failure Analysis of AISI 304 Stainless Steel Shaft Engineering Failure Analysis,” R. Fuller, J. Ehr Gott, W. Heard, S. Robert, R. Stinson, K. Solanki, M. Horstemeyer, *Engineering Failure Analysis*.
- “Multiscale Experiments and Modeling of Kenaf Fiber Bundles and Composites,” Y. Xue, Y. Du, S. Elder, J. Zhang, *Composites B Engineering*.
- “Phase Transformations in Low Alloy Steel Deposits,” H. El Kadiri, L. Wang, M. Horstemeyer, R. Shahbazian-Yassar, S. Felicelli, P. Wang, *Materials Science and Engineering A*.
- “Structure of the Hydrogen Double Vacancy on a Pd(111),” S. Kim, S. Erwin, *Physical Review B*.
- “When Sensitivity is a Function of Age and Time Spent in the Preclinical State in Periodic Cancer Screening,” D. Wu, R. Carino, X. Wu, *Journal of Modern Applied Statistical Methods*, JMASM Inc., In Shlomo S. Sawilowsky.

#### **Peer-Reviewed Conference Papers**

- “Enhanced Surrogate Modeling via Optimum Ensemble of Metamodels,” E. Acar, M. Rais-Rohani, Schaumburg, IL, 4th AIAA Multidisciplinary Design Optimization Specialist Conference.
- “Extended Generalized Lambda Distribution for Fast and Accurate Reliability Analysis,” E. Acar, M. Rais-Rohani, C. Eamon, Schaumburg, IL, 4th AIAA Multidisciplinary Design Optimization Specialist Conference.
- “Fluid Flow, Heat and Mass Transfer in the Molten Pool of LENS Processes,” S. Felicelli, L. Wang, New Orleans, LA, 2008 TMS Annual Meeting & Exhibition.
- “Simulation Analysis of Glacial Surging in the Des Moines Ice Lobe,” M. Horstemeyer, K. Solanki, *Proceedings of the Sixth International Conference on Creationism, ICC 2008*, San Diego, CA.

### **Peer-Reviewed Conference Abstracts**

- “Comparison of Density Measurement Techniques for Large PM Components,” T. Stone, L. Arias-Meza, Y. Hammi, H. El Kadiri, M. Horstemeyer, *MPIF/APMI 2008 World Congress on Powder Metallurgy & Particulate Materials*, Gaylord National Hotel, Washington, DC, June 8–12, 2007.
- “CyberDesign,” T. Haupt, M. Horstemeyer, 2008 TMS Annual Meeting & Exhibition, New Orleans, LA.
- “Modeling for Powder Metallurgy Component Design and Performance Prediction,” Y. Hammi, T. Stone, L. Arias-Meza, M. Horstemeyer, *MPIF/APMI 2008 World Congress on Powder Metallurgy & Particulate Materia*, Gaylord National Hotel, Washington, DC.

### **Non-Refereed Conference Abstracts**

- “Cyberinfrastructure for Design Optimization,” M.Horstemeyer, T. Haupt.

### **Professional Presentations**

- “NeighborWorks America Proposal Presentation,” K. McCarter.

### **D. Patents (disclosures or applications)**

- “Horizontally Adjustable Pedal Assembly,” J. Kang, R. Lewis, J. McGinley, 07-0309-290.

### **E. Participation**

#### **Special Guest**

- V. Branch, American Association of Blacks in Engineering (AABE) local chapter presentation, November 2007.
- Z. Rowland, E. Blades (Asst. to the Chief of Staff for Senator Thad Cochran), Tour of CAVS facility, October 2007.

#### **Visit**

- B. Kirkland, traveled to Japan with the Mississippi Development Authority to support economic development with the Japanese Automotive Industries through SEUS-Japan Association, October 2007.
- E. Marin, Kick-off meeting at TARDEC for project “Material Database and Material Model Development for Polymeric Materials,” Detroit, MI, November 2007.

#### **Service**

- C. Walden, W. Jones, S. Scaggs, participated in hosting a visit of a prospective automotive supplier to Meridian, MS. Walden made a short presentation on how Mississippi State University and CAVS Extension could assist the company if they located within the state. Invited to attend by W. Jones and S. Scaggs of the East Mississippi Economic Development Corporation. This project represented a potential investment of \$100 million and 200 jobs, October 2007.
- D. Brown, attended/participated in IEEE Computer Society Standards Activities Board Fall Meeting, Cancun, Mexico, November 2007.
- L. Simmons, R. Holt, Conducted Time Study Analysis at Harrison Manufacturing, LLC during November and December 2007.
- M. Riddle, D. Brown, developed eLearning for “Testing Methods 101 -- Tension Testing on Instron 5869 and 5882 Machines” for CAVS lab training, December 2007.

- T. Hill, participated in the ISE Design presentations as a judge, November 2007.
- T. Hill, R. Holt, Design and Development of CAVS Extension website, October 2007.
- V. Branch, M. Competition, MSU Robotics Competition, October 2007.
- V. Branch, M. Conference, Ms Science Teachers Conference, October 2007.
- V. Branch, R. Holt, Region II Science Fair Coordinators workshop, November 2007.
- V. Branch, A. testing, ASQ testing, December 2007.
- Z. Rowland, D. Thornell, GSDP presentation to COSMA, October 2007.

#### **Other**

- B. Kirkland, planned and conducted Robert Riley visit and presentation on “Alternative Cars for the 21<sup>st</sup> Century.”
- B. Kirkland, planned and conducted workshop on polymers provided by American Chemical Society Plastics Division, November 2007.
- B. Kirkland, initiated visit with LeFleur Transportation Inc. for use of CAVS’ Vehicle Performance Monitoring Technology.
- B. Kirkland, initiated approximately 17 new releases in magazines, university publications, newspapers and multiple media spots (radio and TV).
- D. Brown, M. Riddle, M. Rendon, CAVS Tour video shoot of ALT software projects, October 2007.
- D. Brown, K. McCarter, I. LLC., define requirements for an integrated InSite Studio / Intelligroup Learning Management System product partnership. Prioritize product development activities as a result of Intelligroup system requirements, December 2007.
- D. Oglesby, A. McAlpin, M. Molen, S. Phillips, presented to Dean of Engineering Board of Directors on Challenge X, October 2007.
- J. Cain, M. Riddle, K. McCarter, Eureka Ranch Workshop sponsored by the MSU Office of Technology Commercialization that focused on helping start up businesses develop their marketing strengths, November 2007.
- R. Sheely, C. Walden, G. Dennis, D. King, D. Jordan, J. Moore, submitted paperwork for MSU to join the Mississippi Automotive Manufacturing Association (MAMA), October 2007.
- T. Hill, T. Crosswhite, A. Sellers, V. Branch, C. Walden, R. Sheely, S. Puryear, Dell Winston Solar Challenge, October 2007.
- T. Hill, developed simulation video for East Mississippi Business Development Corporation as part of an OEM marketing video for the Kewanee site, December 2007.
- T. Hill, R. Holt, trained on Lenel OnGuard security software, December 2007.
- T. Crosswhite, R. Holt, participated in the Winter Simulation Conference in Washington, D.C. from December 9-12, 2007.
- T. Crosswhite, R. Holt, trained on NEC Aspire Phone System, December 2007.
- T. Crosswhite, R. Holt, participated in the Fundamentals of Welding for Engineers Workshop, December 2007.
- V. Branch, attended Madison Career Center Grand Opening, October 2007.

#### **F. Tours**

- B. Kirkland, conducted 9 tours with presentations, totaling 73 visitors.
- D. Carruth, ACCESS Tour, November 2007.
- N. Littell, Student Recruitment Tour, October 2007.
- V. Branch, S.T.E.P. Manufacturers Tour, November 2007.
- Z. Rowland, Cosma, October 2007.
- Z. Rowland, Cypress SemiConductor, October 2007.
- Z. Rowland, FedEx, October 2007.
- Z. Rowland, PACCAR, (2) October 2007.

- Z. Rowland, PACCAR Recruitment Tour, October 2007.
- Z. Rowland, BioMechanics Class, November 2007.
- Z. Rowland, DoE SERC, November 2007.
- Z. Rowland, PACCAR, November 2007.
- Z. Rowland, Parker Hannifin, November 2007.
- Z. Rowland, Wicker Legislative Staffers, November 2007.
- Z. Rowland, Dr. John Bradley NSF, December 2007.
- Z. Rowland, Randall Schmaker - UCF, December 2007.
- Z. Rowland, Suzuki, December 2007.