

RESUME - MICA GRUJICIC

PERSONAL DATA

Wilfred P. and Helen S. Tiencken Professor of Mechanical Engineering
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U. S. Citizen, Naturalized on August 20, 1993 in Columbia, S.C.
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EDUCATION

Ph.D., Materials Science and Engineering, M. I. T., 1983
M. Eng., Materials Engineering, Belgrade University, Yugoslavia, 1978
B. Eng., Metallurgy and Mechanics, Belgrade University, Yugoslavia, 1975

PROFESSIONAL EXPERIENCE

Clemson University, 1997 - present, Professor of Mechanical Engineering

Clemson University, 1992 - 1997, Associate Professor of Materials Engineering and Mechanical Engineering

Clemson University, 1988 - 1992, Assistant Professor of Materials Engineering and Mechanical Engineering

M.I.T. Dept. MS&E, 1984 - 1988, Research Scientist

M.I.T. Dept. MS&E, 1983 - 1984, Postdoctoral Research Associate

M.I.T. Dept. MS&E, 1980 - 1983, Research Assistant

Vinca Inst. Belgrade, 1976 - 1980, Research Associate

CONSULTING EXPERIENCE

Manlabs, Cambridge, MA, (1986-1988), Developed a Cu-Ba-Y-Yb-Eu Database for High-temperature Superconductors

ALUMAX, Norcross, GA, (1993-1994), Developed a Procedure for Assessing the Reliability in End Uses of Al-alloys and Stainless Steels

KEMET, Greenville, S.C., (1996-1997), Oxidation of Silver-Palladium and Nickel Electrodes during Bake-out and Firing Schedule

W. R. Grace & Co., Enoree, SC. (2000), Analysis of the Working Condition of the Vermiculate Dryer

MEMBERSHIPS

Member, The Minerals, Metals and Materials Society, TMS-AIME, (1983-)

PROFESSIONAL ACTIVITIES

ASME Materials Committee, Member, 1989 - 1991

ASM Phase Diagram Committee, Member, 1993 – 1998

Advisory Panelist on the NSF Mechanics and Materials Program for Career 2000 Awards, Arlington, VA, September 23, 1999

Advisory Panelist on the NSF Mechanics and Materials Program for Individual Investigator Awards, Arlington, VA, August 1-2, 1996

Reviewed the Manuscripts for the Following Journals

Metallurgical Transactions, A

Acta Materialia

Scripta Metallurgica

Calphad

Journal of Materials Science

Materials Science and Engineering A

Materials Science and Engineering B

Journal of Materials Synthesis and Processing

Materials and Design

Applied Surface Science

Journal of Fracture

International Journal Solids and Structures

Reviewed the Research Proposals for the Following Funding Agencies

Department of Defense (DoD)

Department of Energy (DOE)

The National Science Foundation (NSF)

The Israel Science Foundation (ISF)

PUBLICATIONS

Books and Monographs:

M. Grujcic, Chapter 9 -Particle/Substrate Interaction in the Cold Spray Bonding Mechanism in”Fundamentals of Cold-Gas Dynamic Spray Editors: Victor K Champagne, Woodhead Publishing Limited, London, 2007.

G. B. Olson and M. Grujicic, Chapter 15 - Martensitic Transformation in "Kinetics of Phase Transformations", editors M. L. Aziz, A. L. Greer and F. Spaepen, in preparation, 2001.

W. S. Owen and M. Grujicic, Encyclopedia of Materials Science and Engineering, Section - "Plastic Deformation: Thermally Activated Glide of Dislocations", Pergamon Press, Oxford, England, pp. 3540-3543, 1986.

M. Grujicic, A. M. Sarosiek, L Kaufman and W. S. Owen, Perspectives in Physical Metallurgy, Section - "The Carbonitride/Austenite Equilibrium in Fe-(C+N)-V-Nb-Mn System", ed. T. Bell, Pergamon Press, Oxford, England, pp. 120-131, 1985.

Refereed Publications

171. W. Wang, Y. Huang, M. Grujicic, "A Study of Impact-Induced Mechanical Effects in Cell Direct Writing Using Smooth Particle Hydrodynamic Method", ASME J. of Manufacturing Sci. and Eng., accepted for publication, December 2007.

170. M. Grujicic, B. Pandurangan, N. Coutris, B. A. Cheeseman, C. Fountzoulas and P. Patel, "A Ballistic Material Model for STARPHIRE[®], A Soda-Lime Transparent-Armor Glass", Materials Science and Engineering, submitted for publication, January 2008.

169. M. Grujicic, N. Seyr, A. Obieglo, M. Erdmann, and J. Holzleitner, "Suitability Analysis of a Polymer Metal Hybrid Technology Based on High-Strength Steels and Direct Polymer-to-Metal Adhesion for Use in Load-Bearing Automotive Body-In-White Applications", Materials Processing Technology, to be submitted for publication, January 2008.

168. M. Grujicic, V. Sellappan, T. He, N. Seyr, A. Obieglo, M. Erdmann, and J. Holzleitner, "Total Life-Cycle Based Materials Selection for Polymer Metal Hybrid Body-In-White Automotive Components", Materials Processing Technology, submitted for publication, December 2007.

167. M. Grujicic, N. Seyr, A. Obieglo, M. Erdmann, and J. Holzleitner, "A Computational Analysis of the Potential of a Clinch-Lock Polymer Metal Hybrid Technology for Use in Load-Bearing Body-In-White Automotive Components", Materials Processing Technology, Since the manuscript contains a technology invention it has not been released yet for publication, November 2007.

166. M. Grujicic, B. Pandurangan, N. Coutris, B. A. Cheeseman, W. N. Roy and R. R. Skaggs, "Computer-simulations based Development of a High Strain-rate, Large-deformation, High-pressure Material Model for STANAG 4569 Sandy

Gravel”, Soil Dynamics and Earthquake Engineering, **accepted for publication, December 2007.**

165. M. Grujicic, V. Sellappan, G. Arakere, J. C. Ziegert, F. Y. Koçer and D. Schmueser, “Multi-Disciplinary Design Optimization of a Composite Car Door for Structural Performance, NVH, Crashworthiness, Durability and Manufacturability”, **Multidiscipline Modeling in Materials and Structures, accepted for publication, December 2007.**

164. M. Grujicic, V. Sellappan, B. Pandurangan, **G. Li**, N. Seyr, M. Erdmann and J. Holzleitner, “Computational Analysis of Injection-Molding Residual-Stress Development in Direct-Adhesion Polymer-to-Metal Hybrid Body-In-White Components”, **Materials Processing Technology, accepted for publication, October 2007.**

163. M. Grujicic, B. Pandurangan, W. C. Bell, **M. Daqaq**, **L. Ma**, N. Seyr, M. Erdmann and J. Holzleitner, “A Computational Analysis and Suitability Assessment of Cold-Gas Spraying of Glass-Fiber Reinforced Poly-Amide 6 for Use in Direct-Adhesion Polymer Metal Hybrid Automotive Components”, **Applied Surface Science, 254, pp. 2136-2145, 2008.**

162. S. Teegavarapu, M. Snider, J. Summers, L. Thompson, and M. Grujicic, “A Driver for Selection of Functionally Inequivalent Concepts at Varying Levels of Abstraction”, **Journal of Design Research, accepted for publication, May 2006.**

161. M. Grujicic, V. Sellappan, L. Mears, **X. Xuan**, N. Seyr, M. Erdmann and **J. Holzleitner**, “Selection of the Spraying Technologies for Over-Coating of Metal-Stampings with Thermo-Plastics for Use In Direct-Adhesion Polymer Metal Hybrid Load-Bearing Component”, **Materials Processing Technology, 198, pp. 300-312, 2008.**

160. M. Grujicic, Chapter 9 -Particle/Substrate Interaction in the Cold Spray Bonding Mechanism in”**Fundamentals of Cold-Gas Dynamic Spray Editors: Victor K Champagne, Woodhead Publishing Limited, London, 2007.**

159. M. Grujicic, B. Pandurangan, B. A. Cheeseman, W. N. Roy and R. R. Skaggs, “A Vehicle-Level Computational Analysis of the Effect of Degree of Sand Saturation un the Destruction Caused by Detonation of a Buried Mine”, **Journal of Battlefield Technology, not allowed to be submitted for publication, January 2007.**

158. M. Grujicic, W. C. Bell, K. L. Koudela, J. F. Tarter and N. Duke, “Smart-Fuze Design and Development Based on Computational Analysis of Warhead/Urban-Target Interactions”, **Journal of Battlefield Technology, not allowed to be submitted for publication, April 2007.**

157. M. Grujicic, G. Arakere, N. Seyr and M. Erdmann, “Application of Topology, Size and Shape Optimization Methods in Polymer Metal Hybrid Structural Lightweight Engineering”, *Multidiscipline Modeling in Materials and Structures*, **accepted for publication, August 2007.**

156. M. Grujicic, V. Sellappan, M. A. Omar, N. Seyr, A. Obieglo, M. Erdmann and J. Holzleitner, “An Overview of the Polymer-to-Metal Direct-Adhesion HYBRID Technologies for Load-Bearing Automotive Components”, *Journal of Materials Processing Technology*, **197, pp. 363-373, 2008.**

155. M. Grujicic, B. Pandurangan, N. Coutris, B. A. Cheeseman, W. N. Roy and R. R. Skaggs, “Derivation and Validation of a Material Model for Clayey Sand for Use in Landmine Detonation Computational Analysis”, *Multidiscipline Modeling in Materials and Structures*, **accepted for publication, May 2007.**

154. M. Grujicic, V. Sellappan, G. Arakere, N. Seyr and M. Erdmann, “Computational Feasibility Analysis of Direct-Adhesion Polymer-To-Metal Hybrid Technology for Load-Bearing Body-In-White Structural Components”, *Journal of Materials Processing Technology*, **195, pp. 282-298, 2008.**

153. M. Grujicic, B. Pandurangan, **R. Qiao**, B. A. Cheeseman, W. N. Roy, R. R. Skaggs and R. Gupta, “Parameterization of the Porous-Material Model for Sand with Different Levels of Water Saturation”, *Soil Dynamics and Earthquake Engineering*, **28, pp. 20-35, 2008.**

152. M. Grujicic, B. Pandurangan, G. M. Mocko, B. A. Cheeseman, W. N. Roy and R. R. Skaggs, “A Combined Multi-Material Euler/Lagrange Computational Analysis of Blast Loading Resulting from Detonation of Buried Landmines”, *Multidiscipline Modeling in Materials and Structures*, **accepted for publication, March 2007.**

151. M. Grujicic, B. Pandurangan, I. Haque, B. A. Cheeseman, W. N. Roy and R. R. Skaggs, “A Computational Analysis of Mine-Blast Survivability of a Soft-Skin Vehicle”, *Multidiscipline Modeling in Materials and Structures*, **3, pp. 431-460, 2007.**

150. M. Grujicic, W. C. Bell, K. L. Koudela and B. A. Cheeseman, “Enhancement of the Ballistic-Protection Performance of E-glass Reinforced Poly-Vinyl-Ester-Epoxy Composite Armor via the Use of a Carbon-Nanotube Forest-Mat Strike Face”, *Applied Surface Science*, **222, pp. XXX-XXX, 2007.**

149. M. Grujicic, W. C. Bell, L. L. Thompson, K. L. Koudela and B. A. Cheeseman, “Ballistic-Protection Performance of Carbon-Nanotube Doped Poly-Vinyl-Ester-

Epoxy Composite Armor Reinforced with E-glass Fiber Mats”, Material Science and Engineering A, **accepted for publication, June 2007.**

148. M. Grujicic, B. Pandurangan, J. D. Summers, B. A. Cheeseman and W. N. Roy, “Application of the Modified Compaction Material Model to Soil with Various Degrees of Water Saturation,” Shock and Vibration, 14, pp. **XXX-XXX**, 2007.

147. M. Grujicic, B. Pandurangan, D. C. Angstadt, K. L. Koudela and B. A. Cheeseman, " Ballistic-Performance Optimization of a Hybrid Carbon-Nanotube /E-glass Reinforced Poly-Vinyl-Ester-Epoxy-Matrix Composite Armor," Journal of Materials Science, 42, pp. 5347-5359, 2007.

146. R. Singh, P. Chandran, M. Grujicic, K.F.Poole, U. Vingnani, S.R. Ganapathi, A. Swaminathan, P. Jagannathan, and H. Iyer, "A Dominance of Silicon CMOS-based Semiconductor Manufacturing Beyond International Technology Roadmap and for Many More Decades to Come," International Journal of ..., submitted for publication, May 2006.

145. M. Grujicic, **D. C. Angstadt**, Y.-P. Sun and K. L. Koudela, "Micro-mechanics Based Derivation of the Materials Constitutive Relations for Carbon Nanotube Reinforced Poly-Vinyl-Ester-Epoxy Based Composites," Journal of Materials Science, 42, pp. **4609-4623**, 2007.

144. M. Grujicic, B. Pandurangan, Y. Huang, B. A. Cheeseman, W. N. Roy and R. R. Skaggs, “Impulse Loading Resulting from Shallow Buried Explosives in Water-saturated Sand”, Journal of Materials: Design and Applications, 221, pp. 21-35, 2007.

143. M. Grujicic, B. Pandurangan, U. Zecevic, K. L. Koudela and B. A. Cheeseman, “Ballistic Performance of Alimuna/S-2 Glass-Reinforced Polymer-Matrix Composite Hybrid Lightweight Armor Against Armor Piercing (AP) and Non-AP Projectiles”, Multidiscipline Modeling in Materials and Structures, 3, pp. 287-312, 2007.

142. M. Grujicic, Y.-P. Sun and K. L. Koudela, “The Effect of Covalent Functionalization of Carbon Nanotube Reinforcements on the Atomic-level Mechanical Properties of Poly-Vinyl-Ester-Epoxy”, Applied Surface Science, 253, pp. 3009-3021, 2007.

141. M. Grujicic, B. Pandurangan, K. L. Koudela and B. A. Cheeseman, “A Computational Analysis of the Ballistic Performance of Light-Wight Hybrid-Composite Armors”, Applied Surface Science, 253, pp. 730-745, 2006.

140. M. Grujicic, B. Pandurangan and B. A. Cheeseman, "The Effect of Degree of Saturation of Sand on Detonation Phenomena Associated with Shallow-buried and Ground-laid Mines", *Shock and Vibration*, 13, pp. 41-62, 2006.
139. M. Grujicic, B. Pandurangan and B. A. Cheeseman, "A Computational Analysis of Detonation of Buried Mines", *Multidiscipline Modeling in Materials and Structures*, 2, pp. 363-387, 2006.
138. M. Grujicic, B. Pandurangan, C. L. Zhao and B. A. Cheeseman, "A Computational Investigation of Various Water-Induced Explosion Mitigation Mechanisms", *Multidiscipline Modeling in Materials and Structures*, 3, pp. 185-212, 2007.
137. M. Grujicic, B. Pandurangan, C. L. Zhao, S. B. Biggers, and D. R. Morgan, "Hypervelocity Impact Resistance of Reinforced Carbon-Carbon/Carbon-Foam Thermal Protection Systems", *Applied Surface Science*, 252, pp. 5035-5050, 2006.
136. M. Grujicic, C. L. Zhao, S. B. Biggers, J. M. Kennedy and D. R. Morgan, "Suitability of a Coal-Derived Carbon-Based Foam for Use in Thermal Protection Systems of Common Aero Vehicles", *Multidiscipline Modeling in Materials and Structures*, 3, pp. 1-26, 2007.
135. M. Grujicic, C. L. Zhao, S. B. Biggers, and D. R. Morgan, "Experimental Investigation and Modeling of Effective Thermal Conductivity and its Temperature Dependence in a Carbon-based Foam", *Journal of Materials Science*, 41, pp. 2309-2317, 2006.
134. M. Grujicic, G. Cao and W. N. Roy, "Suitability of Boron-nitride Single-walled Nanotubes as Fluid-flow Conduits in Nano-valve Applications", *Applied Surface Science*, 246, pp. 149-158, 2005.
133. M. Grujicic, G. Cao and W. N. Roy, "A Computational Analysis of the Lattice Contribution to Thermal Conductivity of Single-walled Carbon Nanotubes", *Journal of Materials Science*, 40, pp. 1943-1952, 2005.
132. M. Grujicic, C. L. Zhao and E. C. Dusel, "The Effect of Thermal Contact Resistance on Heat Management in the Electronic Packaging", *Applied Surface Science*, 246, pp. 290-302, 2005.
131. M. Grujicic, C. L. Zhao, E. C. Dusel, R. S. Miller, D. E. Beasley and D. R. Morgan, "A Computational Analysis of the Thermal Conductivity of the Carbon-Carbon Composite Materials", *Journal of Materials Science*, 41, pp. 8244-8256, 2006.

130. M. Grujicic, C. L. Zhao, S. B. Biggers, J. M. Kennedy and D. R. Morgan, "Heat Transfer and Effective Thermal Conductivity Analyses in Carbon-based Foams for Use in Thermal Protection Systems", *Journal of Materials: Design and Applications*, 219, pp. 217-230, 2005.
129. M. Grujicic G. Cao, B. Pandurangan and W. N. Roy, "Finite Element Analysis Based Design of a Fluid-flow Control Nano-valve", *Materials Science & Engineering B*, 117, pp. 53-61, 2005.
128. M. Grujicic, C. L. Zhao and E. M. Austin, "Optimization of a Piezoelectric Bimorph Grasper for Use in Minimally Invasive Surgical Applications", *Journal of Materials: Design and Applications*, 219, pp. 673-683, 2005.
127. M. Grujicic, K. M. Chittajallu, G. Cao and W. N. Roy, "An Atomic Level Analysis of Conductivity and Strength in Poly(Ethylene Oxide) Sulfonic Acid Based Solid Polymer Electrolytes", *Materials Science and Engineering B*, 117, pp. 187-197, 2005.
126. M. Grujicic, C. L. Zhao and W. N. Roy, "A Statistical Analysis of the Mechanical and Electronic-transport Properties of Stochastic Porous Fibrous Materials", *Journal of Materials Science*, 40, pp. 5181-5190, 2005.
125. M. Grujicic, G. Cao and W. N. Roy, "A Computational Analysis of the Carbon-Nanotube-based Resonant-circuit Sensors", *Applied Surface Science*, 229, pp. 316-323, 2004.
124. L. Qi, B. I. Lee, X. Gu, M. Grujicic, W. D. Samuels, and G. J. Exarhos, "Concentration Efficiency of Doping in ZnS:Cu,Al Phosphor," *Appl. Phys Lettr.*, 83, pp. 4945-4947, 2003.
123. M. Grujicic, G. Cao and W. N. Roy, "A Computational Analysis of the Percolation Threshold and the Electrical Conductivity of Carbon Nanotubes Reinforced Polymeric Materials", *Journal of Materials Science*, 39, pp. 4441-4449, 2004.
122. M. Grujicic, K. M. Chittajallu and S. Walsh, "Lattice Boltzmann Method Based Computation of the Permeability of the Orthogonal Plain-weave Fabric Preforms", *Journal of Materials Science*, 41, pp. 7989-8000, 2006.
121. M. Grujicic, G. Cao and W. N. Roy, "Atomistic Modeling of Solubilization of Carbon Nanotubes by Non-covalent Functionalization with Poly(p-Phenylenevinylene-Co-2, 5-Dioctoxy-m-Phenylenevinylene)", *Applied Surface Science*, 227, pp. 349-363, 2004.

120. M. Grujicic, K. M. Chittajallu and S. Walsh, "Effect of Shear, Compaction and Nesting on Permeability of the Orthogonal Plain-weave Fabric Performs", *Materials Chemistry and Physics*, 86, pp. 358-369, 2004.
119. M. Grujicic, C. L. Zhao, W. S. DeRosset and D. Helfritch, "Adiabatic Shear Instability based Mechanism for Particle/Substrate Bonding in the Cold-gas Dynamic-spray Process", *Materials and Design*, 25, pp. 681-688, 2004.
118. M. Grujicic, G. Cao and W. N. Roy, "Atomistic Simulations of the Solubilization of Single-walled Carbon Nanotubes in Toluene", *Journal of Materials Science*, 39, pp. 2315-2325, 2004.
117. M. Grujicic, C. L. Zhao, C. Tong, W. S. DeRosset and D. Helfritch, "Analysis of the Impact Velocity of Powder Particles in the Cold-gas Dynamic-spray Process", *Materials Science and Engineering A*, 368, pp. 222-230, 2004.
116. M. Grujicic, K. M. Chittajallu and J. T. Pukrushpan, "Control of the Transient Behavior of Polymer Electrolyte Membrane (PEM) Fuel Cell Systems", *Journal of Automobile Engineering*, 218, pp. 1239-1250, 2004.
115. M. Grujicic, K. M. Chittajallu, E. H. Law and J. T. Pukrushpan, "Model Based Control Strategies in the Dynamic Interaction of Air Supply and Fuel Cell", *Journal of Power and Energy*, 218A, pp. 487-450, 2004.
114. M. Grujicic, C. L. Zhao, K. M. Chittajallu and J. M. Ochterbeck "Cathode and Interdigitated Air Distributor Optimization in Polymer Electrolyte Membrane (PEM) Fuel Cells", *Materials Science and Engineering B*, 108, pp. 241-252, 2004.
113. M. Grujicic and K. M. Chittajallu, "Geometrical Optimization of The Cathode in Polymer Electrolyte Membrane (PEM) Fuel Cells", *Chemical Engineering Science*, 59, pp. 5883-5895, 2004.
112. M. Grujicic and K. M. Chittajallu, "Design and Optimization of Polymer Electrolyte Membrane (PEM) Fuel Cells", *Applied Surface Science*, 227, pp. 56-72, 2004.
111. M. Grujicic, J. R. Saylor, D. E. Beasley, W. S. DeRosset and D. Helfritch, "Computational Analysis of the Interfacial Bonding Between Feed Powder Particles and the Substrate in the Cold-gas Dynamic-spray Process", *Applied Surface Science*, 219, pp. 211-327, 2003.
110. M. Grujicic, K. M. Chittajallu and S. Walsh, "Non-isothermal Preform Infiltration During the Vacuum Assisted Resin Transfer (VARTM) Process", *Applied Surface Science*, 245, pp. 51-64, 2005.

109. M. Grujicic, W. S. DeRosset and D. Helfritch, "Flow Analysis and Nozzle-shape Optimization for the Cold-gas Dynamic-spray Process", *Journal of Engineering Manufacture*, 217, pp. 1603-1613, 2003.
108. M. Grujicic, K. M. Chittajallu and S. Walsh, "Optimization of the VARTM Process for Enhancement of the Degree of Devolatilization of Polymerization By-products and Solvents", *Journal of Materials Science*, 38, pp. 1729-1739, 2003.
107. M. Grujicic, G. Cao and R. Singh, "The Effect of Topological Defects and Oxygen Adsorbates on the Electronic Transport Properties of Single-Walled Carbon Nanotubes", *Applied Surface Science*, 211, pp. 166-183, 2003.
106. M. Grujicic, G. Cao, A. M. Rao, T. M. Tritt and S. Nayak, "UV-Light Enhanced Oxidation of Carbon Nanotubes Through Adsorption of Polar Molecules," *Applied Surface Science*, 214, pp. 289-303, 2003.
105. M. Grujicic, G. Cao and B. Gersten, "Enhancement of Field Emission in Carbon Nanotubes Through Adsorption of Polar Molecules," *Applied Surface Science*, 206, pp. 167-177, 2003.
104. M. Grujicic, G. Cao and P. F. Joseph, "Multi-Scale Modeling of Deformation and Fracture of Polycrystalline Lamellar γ -TiAl + α_2 -Ti₃Al Alloys," *Int. J. Multiscale Computational Engineering*, 1, pp. 1-21, 2003.
103. M. Grujicic, G. Cao and B. Gersten, "Atomic-Scale Computations of the Lattice Contribution to Thermal Conductivity of Single-Walled Carbon Nanotubes," *Materials Science and Engineering B*, 107, pp. 204-216, 2004.
102. J. Huang, G. M. Fadel, V. Y. Blouin and M. Grujicic, "Bi-objective Optimization Design of Functionally Gradient Materials," *Materials & Design*, 23, pp. 657-666, 2002.
101. M. Grujicic, G. Cao and R. S. Miller, "Computer Modeling of the Evolution of Dendrite Microstructure in Binary Alloys During Non-isothermal Solidification," *Journal of Materials Synthesis and Processing*, 10, pp. 191-203, 2002.
100. M. Grujicic, J. R. DeLong and W. DeRosset, "The Effect of Lining Segmentation on the Reliability of Hybrid Ceramic/Steel Gun Barrels," *Materials & Design*, 24, pp. 69-78, 2003.
99. M. Grujicic, J. R. DeLong and W. DeRosset, "A Reliability Analysis of Hybrid Ceramic/Steel Gun Barrels," *International Journal of Fatigue and Fracture in Engineering Materials and Structures*, 26, 405-420, 2002.

98. M. Grujicic, G. Cao and B. Gersten, "An Atomic-Scale Analysis of Catalytically-Assisted Chemical Vapor Deposition of Carbon Nanotubes," *Materials Science and Engineering B*, B94, pp. 247-259, 2002.
97. M. Grujicic, G. Cao and B. Gersten, "Optimization of the Chemical Vapor Deposition Process for Carbon Nanotubes Fabrication," *Applied Surface Science*, 191, pp. 223-239, 2002.
96. M. Grujicic, J. R. Delong and W. DeRosset, "A Probabilistic Finite Element Analysis of Residual Stresses in Shrink-Fit Hybrid Ceramic/Steel Gun Barrels," *Journal of Materials: Design & Applications*, 216 Part L, pp. 219-232, 2002.
95. M. Grujicic, G. Cao and B. Gersten, "Reactor Length-Scale Modeling of Chemical Vapor Deposition of Carbon Nanotubes" *Journal of Materials Science*, 38, pp. 1819-1830, 2003.
94. M. Grujicic, G. Cao and S. Batchu, "Crystal Plasticity-Based Finite Element Analysis of Deformation and Fracture of Polycrystalline Lamellar γ -TiAl + α_2 -Ti₃Al Alloys," *Journal of Materials Science*, 33, pp. 307-322, 2003.
93. M. Grujicic and G. Cao, "Crack Growth in Lamellar Titanium Aluminides Containing Dispersed Beta Phase Precipitates," *Journal of Materials Science*, 37, pp. 2949-2963, 2002.
92. R. S. Miller, G. Cao and M. Grujicic, "Monte Carlo Simulation of Three-Dimensional Non-Isothermal Grain-Microstructure Evolution: Application to LENSTM Rapid Fabrication," *Journal of Materials Synthesis and Processing*, 9, 329-345, 2001.
91. M. Grujicic, Y. Hu, G. M. Fadel and D. M. Keicher, "Optimization of the LENSTM Rapid Fabrication Process for In-Flight Melting of the Feed Powder," *Journal of Materials Synthesis and Processing*, 9, pp. 223-233, 2002.
90. M. Grujicic, G. Cao and G. M. Fadel, "Effective Materials Properties: Determination and Application in Mechanical Design and Optimization," *Journal of Materials: Design & Applications*, 215, pp. 225-234, 2002.
89. M. Grujicic and S. Batchu, "Crystal Plasticity Analysis of Earing in Deep-Drawn OFHC Copper Cups," *Journal of Material Science*, 37, 753-764, 2002.
88. D. Columbus and M. Grujicic, "A Comparative Discrete-Dislocation/Nonlocal Crystal-Plasticity Analysis of Plane-Strain Mode I Fracture," *Materials Science and Engineering*, A323, pp. 386-402, 2002.

87. M. Grujicic, G. Cao and R. S. Figliola, "Computer Simulations of the Evolution of Solidification Microstructure in the LENSTM Rapid Fabrication Process," *Applied Surface Science*, 183, 43-57, 2001.
86. D. Columbus and M. Grujicic, "A Comparison of Mode I Fracture Behavior of F.C.C. and B.C.C. Metallic Materials: A Discrete Dislocation Analysis," *Applied Surface Science*, 180, 138-161, 2001.
85. M. Grujicic and S. Batchu, "A Crystal Plasticity Materials Constitutive Model for Polysynthetically-twinned γ -TiAl + α_2 -TiAl Single Crystals," *Journal of Materials Science*, 36, pp. 2851-2863, 2001.
84. M. Grujicic and D. Columbus, "A Comparative Discrete-Dislocation/Crystal-Plasticity Analysis of Bending of a Single-Crystalline Microbeam," *Journal of Material Science*, 36, pp. 2179-2188, 2001.
83. M. Grujicic and S.G. Lai, "Multi Length-scale Modeling of CVD of Titanium Nitride Coatings," *Journal of Material Science*, 36, pp. 2937-2953, 2001.
82. M. Grujicic and S.G. Lai, "Grain-scale Modeling of Microstructure Evolution in CVD-grown Polycrystalline Diamond Films", *Journal of Materials Synthesis and Processing*, 8, pp. 73-85, 2000.
81. M. Grujicic and S. G. Lai, "Multi Length-scale Modeling of CVD of Diamond: Part I: A Combined Reactor Scale/Atomic-scale Analysis", *Journal of Material Science*, 35, pp. 5359-5369, 2000.
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12. M. Grujcic, I. J. Wang and W. S. Owen, "On the Formation of Duplex Precipitate Phases in an Ultra-low Carbon Micro-alloyed Steel", *Calphad* 12, No 3, pp. 261-275, 1988.
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9. M. Grujcic, T. Erturk and W. S. Owen, "A Finite Element Analysis of the Effect of the Accommodation Strains in the Ferrite Phase on the Work Hardening of a Dual- Phase Steel", *Materials Science and Engineering*, 82, pp. 151-160, 1986.
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3. M. Grujcic, A. M. Sarosiek, L. Kaufman and W. S. Owen, "The Carbonitride/Austenite Equilibrium in Fe-(C+N)-V-Nb-Mn System" *Calphad*, 9, pp. 117-128, 1985.

2. A. M. Sarosiek, M. Grujicic and W. S. Owen, "The Importance of the Heterogeneity of the Deformation in the Ferrite Phase of a Dual-Phase Steel", *Scripta Metall.*, 18, No. 4, pp. 353-356, April, 1984.

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M. Grujicic, R. J. Diefendorf and S.G. Lai, "Molecular Modeling of CVD of (111) - oriented Diamond Film by Kinetic Monte Carlo Method", 24th Biennial Conference on Carbon, Charleston, SC, July 11-17, 1999.

W. S. Owen and M. Grujicic, "A Model for Solution Strengthening of Austenite by Carbon and Nitrogen", Symposium to Honor Professor Julia R. Weertman, 1999 TMS Fall Meeting, Cincinnati, OH, October 31 - November 4, 1999.

M. Grujicic, H. Zhao and G. L. Krasko, "Atomistic Simulation of Effect of Impurities S (111) Grain Boundary Fracture in Tungsten ", MRS Meeting, Boston, MA, 1997.

W. S. Owen and M. Grujicic, "Local Order Parameter in Face-Centered Cubic Interstitial Alloys of Iron", CALPHAD XXV International Conference, Erice, Italy, May 26-31, 1997.

S. Tangrila and M. Grujicic, "Crystal Structures of Laves Phases in Nb-Cr-Fe System", Proceedings Symp. Refractory Materials, Denver, Colorado, February 22, 1993.

M. Grujicic and W. S. Owen, "A Comparison of Plastic Flow in Fe-Ni Invar and Fe-Ni-Cr Elinvar Alloys", in *Physical Metallurgy of Controlled Expansion Invar-type Alloys*, eds. K. C. Russell and D. F. Smith, TMS Publication, Warrendale, PA, 1990, pp. 235-252.

M. Jovanovic, M. Grujicic and Dj. Drobjak, "Serrated Yielding in Al-Zn Alloys", ICMA-International Conference on Strengthening of Metals, Tampere, August 1988, pp. 123-135.

M. Grujicic, J. -O. Nilsson, W. S. Owen and T. Thorvaldsson, "Basic Deformation Mechanisms in Nitrogen Strengthened Stable Austenitic Stainless Steel", Int'l. Conf. on High Nitrogen Steel, HNS-88, Lille, France, The Institute of Metals, London, pp.151-165, 1989.

H. M. Lee, S. M. Allen and M. Grujicic, "Stability and Coarsening Resistance of M₂C Carbides in Secondary Hardening Steels", Proc. 34th Sagamore Army Materials Research Conference, August 30 - Sept 3, 1987, Lake George, N.Y.,

Innovations in Ultrahigh-Strength Steel Technology, eds. G.B. Olson, M. Azrin and E. S. Wright, 1990, pp. 127-146.

M. Grujicic, M. Buonanno, S. M. Allen, G. B. Olson and M. Cohen, "Heterogeneous Precipitation of Austenite for Stabilization", Proc. 34th Sagamore Army Materials Research Conference, Aug. 30 - Sept 3, 1987, Lake George, N.Y., **Innovations in Ultrahigh-Strength Steel Technology**, eds. G.B. Olson, M. Azrin and E. S. Wright, 1990, pp. 527-548.

M. Grujicic, "Design of M₂C Carbides for Secondary Hardening", Proc. 34th Sagamore Army Materials Research Conference, Aug. 30 - Sept 3, 1987, Lake George, N.Y., **Innovations in Ultrahigh-Strength Steel Technology**, eds. G.B. Olson, M. Azrin and E. S. Wright, 1990, pp. 223-239.

M. Grujicic and W. S. Owen, "The Strength of Aged Fe-Ni-C Martensite" Proceedings, International Conference on Martensitic Transformations (ICOMAT-86), Nara, Japan, August, 1986, pp. 419-424.

M. Grujicic and W. S. Owen, "Thermally Activated β_1 - γ_1 ' Martensitic Interfacial Motion in Cu-Al-Ni", Proceedings, International Conference on Martensitic Transformations (ICOMAT-86), Nara, Japan, August, 1986, pp. 800-805.

M. Grujicic, H. M. Lee and S. M. Allen, "Use of the Thermo-Calc Software and Database for Alloy Design of High-Strength Steels", Proc. Int'l. Conf. User Applic. Alloy Phase Diagrams, ed. L. Kaufman, ASM Int'l. Conf. User Applic. Alloy Phase Diagrams, ed. L. Kaufman, ASM International, 1986, pp. 195-202.

M. Grujicic, G. B. Olson and W. S. Owen, "Kinetics of Martensitic Interface Motion", Proc. ICOMAT-82, Leuven, Belgium, Journal de Physique, 43, pp. C4-173-179, 1982, Suppl. 12.

M. Grujicic, D. V. Drobnjak and M. Jovanovic, "Activation Energy for Dynamic Strain Aging in an AlZn6 Alloy", Proc. Yugoslav Symp. Metall., Belgrade, January 1977, pp. 76-94.

HONORS AND AWARDS

Four times winner of the "Panta Tutundzic Award" as the best Undergraduate Student at Belgrade University, 1971-1975.

SPONSORED RESEARCH

"Plasma-Arc Smelting of Ferro-Chromium", The South Carolina Research Authorities/MacAlloy Corporation, (1989), (Single Investigator), \$5,000.

"Mechanical Alloying", Provost Award, (1992), (Single Principal Investigator) \$3,000.

"Dispersed-phase Transformation Toughening of Gamma Titanium Aluminide", NSF, (1990 - 92), (Single Principal Investigator), \$47,300.

"Nitrogen Strengthening of Fe-Ni-Cr Single Crystals", NSF, (1991 -94), (Single Principal Investigator), \$210,000.

"Toughening of Gamma TiAl by Martensitic Transformation", NSF, (1994 - 97), (Single Principal Investigator), \$210,000.

"A Multi-Scale Analysis of Fracture of Transformation Toughened Metallic Materials", NSF, (1996 - 2000), (Single Principal Investigator), \$130,000.

"APT Materials Handbook", SCUREF, (1996-1998), (Single Principal Investigator), \$87,000.

"Design, Analysis and Processing of Functionally Graded Materials", DoD, (1996-2000), (Co-Principal Investigator), \$240,000/\$480,000.

"Upgrade of Bernex 200 CVD System", DoD, (1999-2000), (Single Principal Investigator), \$50,000.

"Dispersed-phase Transformation Toughening of Lamellar γ -TiAl+ α_2 -Ti₃Al Intermetallic", NSF, (1999 - 02), (Single Principal Investigator), \$240,000.

"Performance Modeling of Gun Tubes and Process Modeling of Carbon Nanotubes", ARO, (2001 - 03), (Single Principal Investigator), \$200,000.

"Thermal Protection Systems for Space Applications", US Army through Touchstone Research Laboratory, Ltd, (2003 - 04), (Co-principal Investigator), \$14,020/\$28,040.

"Advancing Carbon Foam Technology for Thermal Protection System", US Army through Touchstone Research Laboratory, Ltd, (2003-2004), (Co-principal Investigator), \$65,774/\$131,548.

"Analysis and Modeling of Detonation Behavior of Shallow-Buried Explosives and Explosion Mitigation with Water Bags", Army Research Laboratories, (2004-2006), (Single Principal Investigator), \$199,957.

"Lightweight Engineering: Seamless Wiring", BMW, (2005-2006), (Co-Principal Investigator), \$19,030/\$51,809.

"Lightweight Engineering: Headlight Optimization", BMW, (2005-2006), (Co-

Principal Investigator), \$ \$22,122/\$55,622.

“Lightweight Engineering: Seat Concept Optimization”, BMW, (2005-2006), (Co-Principal Investigator), \$38,340/\$85,790.

“Lightweight Engineering: Hybrid Structures: Application of Metal/Polymer Hybrid Materials in Load-bearing Automotive Structures”, BMW, (2005-2007), (Single Principal Investigator), \$145,000.

“Computational Analysis and Modeling of Various Phenomena Accompanying Detonation of Explosives Shallow-Buried in Soil”, Army Research Laboratories, (2006-2009), (Single Principal Investigator), \$299,999.00.

“Multi-scale Modeling and Demonstration of Multi-walled Carbon Nanotube Reinforced Protective Materials for IED Mitigation”, Office of Naval Research, (2005-2007), (Co-Principal Investigator), \$250,000/\$350,000.

“Urban Target Warhead Interaction Simulation for Smart Fuze Development”, Applied Research Laboratories, (2006-2007), (Single-Principal Investigator), \$80,000.

DOCTORAL GRADUATES

Haidemenopoulos, G. "Dispersed Phase Transformation Toughening in Ultrahigh Strength Steels", 1988. (Co-advised with Prof. G. B. Olson).

Lee, H. M., "Stability and Coarsening Resistance of M₂C Carbides in the Secondary Hardening Reaction", 1989. (Co-advised with S. M. Allen).

Zhou X. W., "The Nitrogen Strengthening Mechanism in the Single Crystalline Fe-Ni-Cr Austenitic Stainless Steels", 1995.

Dang P., "Dispersed Ti-base Beta Phase Transformation Toughening of Gamma Titanium Aluminide", 1996.

Lai, S., "Multi-Scale Simulation of CVD of Diamond Films and TiN Coatings", May 2000.

Cao, G., “Multilevel Scale Computational Simulation of the Processing/Properties/Performance of Single Wall Carbon Nanotubes”, December 2004.

MASTER GRADUATES

Byrnes, M. L. G, "Nitrogen Strengthening of a Stable Austenitic Stainless Steel" 1985. (Co-advised with Prof. W. S. Owen).

Wang, I. J., "Formation of Duplex Precipitate Phases in an Ultra-low Carbon Microalloyed Steels", 1986. (Co-advised with Prof. W. S. Owen)

Narayan, C. P., "Design of Niobium-based Alloys Containing (Cr, Fe) 2Nb Laves Phases For Improvement of Room-temperature Ductility", 1992.

Tangrila, S., "Design and Synthesis of Ti-Al Base Beta Phase for Dispersed-Phase Transformation Toughening of Gamma Titanium Aluminide", 1991.

Balakrishnan, P. "Interdisciplinary Design of An Experimental Apparatus to Manufacture Advanced Metals my Jet-Impingement Mixing", 1992.

Anand, P., "The effect of Austenite Stability in Stretch-Formability of Fe-31Ni-5Cr TRIP Steels", 1992.

Arokiaraj, S., "Design and Processing of Beta Dispersion and Ytria-Stabilized Tetragonal Zirconia Dispersion for Transformation Toughening of Gamma Titanium Aluminide", 1993.

Vangavolu, S., "Implementation of a Single-Scalar Internal Variable Constitutive Model to Simulation of Metal Forming", 1993.

Sankaran, N., "Continuum Analysis of Transformation-Enhanced Ductility and Toughness in Gamma TiAl/Beta Ti-Al-V-Fe Phase System", 1996.

Batchu, S., "Crystal Plasticity Based Finite Element Analysis of Deformation and Fracture of Polycrystalline Lamellar γ -TiAl + α_2 -Ti₃Al Alloys", February 2001.

Columbus, D., "Discrete-dislocation Modeling of Deformation and Fracture", March 2001.

DeLong, J., "Finite Element Analysis of Ceramic Gun Tube Performance", May 2002.

Chittajallu, K., "Computational Modeling of Vacuum Assisted Resin Transfer Molding (VARTM) Process", May 2004.

Zhao, C. L., "Experimental & Computational Investigations of the Suitability of a Carbon Foam For Use in Re-Entry Vehicle Thermal-Protection Applications", May 2005.

CURRENT GRADUATE ADVISING

Pandurangan, B., (Ph.D.) “Analysis and Modeling of Detonation Behavior of Shallow-Buried Explosives and Explosion Mitigation with Water Bags”, starting date, January 2004.

Arakere, G., “(Ph.D.) “Lightweight Engineering: Hybrid Structures: Application of Metal/Polymer Hybrid Materials in Load-bearing Automotive Structures”, starting date, August 2006.

Bell, W. C., (Ph.D.) “Multi-scale modeling and demonstration of Multi-walled Carbon Nanotube Reinforced Protective Materials for IED Mitigation”, starting date, August 2006.

Sellappan, V., (M.S.) “Lightweight Engineering: Hybrid Structures: Application of Metal/Polymer Hybrid Materials in Load-bearing Automotive Structures”, starting date, August 2006.

Vimalanathan, S., (M.S.) “Urban Target Warhead Interaction Simulation for Smart Fuze Development”, starting date, January 2007.

Ramachandran, M., (M.S.) “Urban Target Warhead Interaction Simulation for Smart Fuze Development”, starting date, January 2007.

TEACHING

Courses Taught:

ME 202, Manufacturing Processes, F 88, S 89, SS 89, F 89 (2), S 90.

ME 204, Engineering Materials for Engineering Processes I, F 92 (2), S 93, SS 93, F 93, F 94, S 95 (2), SS 95.

ME 205, Numerical Methods in Engineering, F 96, S 02, F 02, S 03.

ME 208, Numerical Methods in Engineering, S 91, SS 91, F 91, S 94 (2), SS 94, SS 95, F 95, S 96 (2).

ME 301, Materials for Mechanical Engineering Applications, S 04 (2).

EM 304, Strength of Materials, S 92.

ME 404, Manufacturing Processes, S 97 (2), F 97 (2), S 98 (2), S 99, F 00, S 01.

ME 440, Materials for Aggressive Environments, F 98, F 99, F 00, F 01, F 02, F 04, F 05, F 06, F 07.

ME 861 Materials Selection in Engineering Design, F 99, S 01, S 02, S 03, S 04, S 05, S 06, S 07.

MATE 826, Phase Equilibria in Materials Systems, F 88, S 90, F 91, S 93, F 94, F 95, F 96

MATE 827, Kinetics of Phase Transformation, S 89, F 90, S 92, F 93, S 98, S 99, S 00, S 01

New Course Developed:

ME 204, Engineering Materials for Engineering Processes
ME 404, Manufacturing Processes
ME 440, Materials for Aggressive Environments
MATE 826, Phase Equilibria in Materials Systems
MATE 827, Kinetics of Phase Transformation
ME 861 Materials Selection in Engineering Design

UNIVERSITY AND PUBLIC SERVICE

Continuing Engineering Education:

"Today's Engineering Materials", Developer/Lecturer, March 12 -13, 1997
"Today's Engineering Materials", Developer/Lecturer, March 5-6, 1996
"Materials for Orthopedic Implants", Developer/Lecturer, June 17-19, 1995
"Engineering Materials", Developer/Lecturer, November 7-8, 1994
"Engineering Materials", Developer/Lecturer, November 1-2, 1993
"Materials for Orthopedic Implants", Developer/Lecturer, February 11-14, 1993
"Engineering Materials", Developer/Lecturer, October 20-21, 1992
"Engineering Materials", Developer/Lecturer, March, 19-20, 1991
"Materials for Orthopedic Implants", Developer/Lecturer, December 11-15, 1991

Committees:

Department:

Member, Automotive Research Center Search (2006-07)
Member, Tenure, Reappointment, and Promotion (2006-07)
Member, Graduate and Research (2006-07)
Member, Automotive Research Center Search (2005-06)
Member, Tenure, Reappointment, and Promotion (2005-06)
Member, Graduate and Research (2005-06)
Member, Automotive Research Center Director Search (2004-05)
Chairman, MMS Subject Area Group (2004-05)
Member, Tenure, Reappointment, and Promotion (2004-05)
Member, Graduate and Research (2004-05)
Member, Automotive Research Center Director Search (2003-04)
Chairman, MMS Subject Area Group (2003-04)
Member, Tenure, Reappointment, and Promotion (2003-04)
Member, Graduate and Research (2003-04)
Member, Tenure, Reappointment, and Promotion (2002-03)
Member, Graduate and Research (2002-03)
Chairman, Graduate and Research (2001-02)
Member, Tenure, Reappointment, and Promotion (2001-02)

Member, Tenure, Reappointment, and Promotion (2000-01)
Chairman, PhD Qualifying Examination (2000-01)
Chairman, Graduate and Research (1999-00)
Chairman, Seminar (1998-99)
Chairman, PhD Qualifying Examination (1998-99)
Member, Graduate and Research (1998-99)
Member, Laboratory (1997-98)
Member, Laboratory (1996-97)
Chairman, PhD Qualifying Examination (1996-97)
Member, Graduate and Research (1996-97)
Chairman, Graduate and Research (1995-96)
Member, PhD Qualifying Examination (1995-96)
Member, Graduate and Research (1994-95)
Member, Computer Utilization (1994-95)
Chairman, Computer Utilization (1993-94)
Member, Computer Utilization (1992-93)
Member, Computer Utilization (1992-93)
Member, Scholarship and Awards (1991-92)
Member, Scholarship and Awards (1990-91)
Member, Scholarship and Awards (1989-90)

College:

Chairman, MS&E Curriculum Committee (2000-01)
Chairman, MS&E Curriculum Committee (1999-00)
Chairman, MS&E Curriculum Committee (1998-99)
Chairman, MS&E Curriculum Committee (1997-98)
Member, MS&E Steering Committee (1995-96)
Chairman, MS&E Curriculum Committee (1994-95)
Chairman, MS&E Curriculum Committee (1993-94)
Member, Dean's Ad-hoc Computer Committee, (1992-93)
Member, Computer Utilization Committee, (1992-93)
Chairman, MS&E Curriculum Committee (1992-93)

Other Services:

Supervised 21 ME415 (Undergraduate Research) Students
Supervised 5 REU (Research Experience for Undergraduate)/NSF Students

Date of most recent resume update: October 17, 2006