

JARED LEE SOMMER, PH.D.

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Advanced Materials and Composites
Research • Development • Management

EXPERIENCE

PRESIDENT **SEPTEMBER 2001- PRESENT**
Sommer Materials Research, Inc. (SMR) *North Salt Lake, UT*
Conducting research in advanced materials and processes for the goal of commercialization. Areas of research activity include particle size optimization, glass coatings, thermoplastic molding compounds for electronics and architectural applications, foamed aluminum, high conductivity fillers, and geopolymer materials. Material and optimization technology used in Revolutionary Plastics, Inc, a multi-million dollar start-up company.

SENIOR RESEARCH ENGINEER **DECEMBER 1997 - MAY 2001**
Materials and Electrochemical Research (MER) Corporation *Tucson, Arizona*
Managed and conducted research in advanced high-temperature ceramic-to-metal brazed joints, refractory ceramic nanoparticle fabrication (SiC, B4C) and plasma sintering, microchannel heat pipe electronic substrates, electroplating, and diamond-deposition technologies.

SENIOR RESEARCH SCIENTIST **OCTOBER 1991 - OCTOBER 1997**
Technical Research Associates, Inc. (TRA) *Salt Lake City, Utah*
Advanced the development of copper/graphite fiber composite heat sink materials for electronic applications. This composite technology resulted in a spin-off company (Thermal Products, Inc., Salt Lake City, UT). Areas of experience include metal-to-ceramic brazed joints, electronic heat sink materials, chemical coatings for carbon fiber, CVD, and oxide dispersion strengthened metals.

RESEARCH ASSISTANT **SEPTEMBER 1985 - OCTOBER 1991**
Massachusetts Institute of Technology (MIT) *Cambridge, Massachusetts*
Thesis topic focused on the effects of molten metal infiltration in deformable fiber reinforcement for the fabrication of metal-matrix composite material. Investigated the use of wettable oxide coatings for composite reinforcement. Designed and built high-pressure infiltration equipment.

RESEARCH ASSISTANT (PART-TIME) **NOVEMBER 1983 - SEPTEMBER 1985**
Technical Research Associates, Inc. *Salt Lake City, Utah*
Performed literature researches on various advanced material topics for research proposals. Researched and developed oxide dispersion strengthened metals technology.

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT) **CAMBRIDGE, MASSACHUSETTS**
Materials Science/Metallurgy -- *Doctorate of Philosophy* 1985 - 1991
Japanese -- *Minor*

UNIVERSITY OF UTAH **SALT LAKE CITY, UTAH**
Extractive Metallurgy-- Bachelors of Science (Magna Cum Laude) 1982 - 1985

CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS - MISSIONARY **FUKUOKA, JAPAN**
Missionary - Southern Japan 1980 - 1982

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PATENTS

- “Improved Heat Transfer Apparatus and Method for Tubes Incorporated in Graphite or Carbon/Carbon Composites,” September 1998, U.S. Patent 5,806,588.
- “Molybdenum Carbide Coated Carbonaceous Materials and Metal Composites of the Same,” 10 November 1998, U.S. Patent 5,834,115.
- “Method for Coating a Carbonaceous Material with a Molybdenum Carbide Coating,” 22 June 1999, U.S. Patent 5,914,156.
- “Fly Ash and Cinder Strengthened Thermoplastic,” 1 Feb 2011, U.S. Patent 7,879,939.
- “Thermoplastic Composition with Fly Ash Materials,” Pat. Pending. App. 13/018,222.

CONTRACT EXPERIENCE

DIRECTLY FUNDED CONTRACTS:

- “Novel Approach for Producing Thermally Conductive Composites,” AF SBIR Phase I Contract #FA8650-10-M-5104, \$100,000, Jared L. Sommer, Ph.D. P.I., Awarded Dec 2009.
- “Novel High Temperature Geopolymer for Spall-Resistant Pavement Materials,” AF SBIR Phase II Contract #F071-108-2526, \$750,000, Jared L. Sommer, Ph.D. P.I., Awarded Apr 2008.
- “Novel High Temperature Geopolymer for Spall-Resistant Pavement Materials,” AF SBIR Phase I Contract #F071-108-2526, \$100,000, Jared L. Sommer, Ph.D. P.I., Awarded Jun 2007.
- “Novel Micro-Arc Oxidation Method for Applying Wear-Resistant Ceramic Coatings on Lightweight Metals,” NSF SBIR Grant # IIP-0637323, \$100,000, Jared L. Sommer, Ph.D. P.I., Awarded Jan 2007.
- “High-Carbon Fly Ash Filler for the Manufacturing of Low-Cost Commercial Thermoplastic,” DOE SBIR Phase I Grant # DE-FG02-06ER84619, \$100,000, Jared L. Sommer, Ph.D. P.I., Awarded Jun 2006.
- “Multimodal High-Conductivity Filler for Epoxy Molding Compounds,” NSF SBIR Phase II Grant #0349517, \$500,000, Jared L. Sommer, Ph.D. P.I., Awarded Sep 2005.
- “Low-cost Metal Foams Produced by Novel Manufacturing Techniques,” NSF SBIR Phase I Contract #0419602, \$100,000, Jared L. Sommer, Ph.D. P.I., Awarded Feb 2004.
- “Low-cost Enamel Coatings on Stainless Steel Foils for Thin Film Photovoltaics,” AF SBIR Phase II Contract #F29601-03-C-0080, \$750,000, J. L. Sommer, Ph.D. P.I., Awarded Apr 2003.
- “Multimodal High-Conductivity Filler for Epoxy Molding Compounds,” NSF SBIR Phase I Grant #DMI-0215224, \$100,000, Jared L. Sommer, Ph.D. P.I., Awarded Jun 2002.
- “Low-cost Enamel Coatings on Stainless Steel Foils for Thin Film Photovoltaics,” AF SBIR Phase I Contract #F29601-02-C-0081, \$100,000, Jared L. Sommer, Ph.D. P.I., Awarded Apr 2002.
- “Novel Joining Technique for ODS Iron Aluminide Alloys,” DOE SBIR Phase II Contract, \$700,000, Jared L. Sommer, Ph.D. P.I., Awarded June 2001.
- “Novel Joining Technique for ODS Iron Aluminide Alloys,” DOE SBIR Phase I Contract #DE-FG03-00ER83041, \$100,000, Jared L. Sommer, Ph.D. P.I., Awarded Aug 2000.
- “Novel Boiling Enhance Microchannel Heat Sink with Low CTE,” BMDO SBIR Phase I Contract #DASG60-00-M-8803, \$100,000, Jared L. Sommer, Ph.D. P.I., Awarded May 2000.
- “High-Rate Sintering of SiC Nanoparticles using Field-assisted Sintering Technology,” Army Contract, Army Phase I SBIR, \$100,000, Awarded Nov 1999.
- “Low-Thermal Expansion Substrate Containing Multiple Micro-Heat Pipes,” NSF Phase I SBIR Contract #DMI-9861183, \$100,000, Jared L. Sommer, Ph.D., Principal Investigator (P.I.), Awarded January 1999.
- “Diamond-Like Carbon Dielectric Films for Electronic Applications,” ARO Contract #DAAD-19-99-C-0009, \$100,000, Jared L. Sommer, Ph.D., Principal Investigator (P.I.), Awarded December 1998.
- “High-Conductivity Composite Heat Sinks for High Speed Helicopter Gears,” Army Phase I SBIR Contract, \$100,000, Jared L. Sommer, Ph.D., Principal Investigator (P.I.), Awarded January 1998.

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- "High Conductivity, Low-Cost Aluminum Composite for Thermal Management," DARPA Phase I SBIR Contract No. 96SB2-0336-2, \$99,000, Jared L. Sommer, Ph.D., P.I., Awarded December 1996.
- "Discontinuous Fiber Interlayer for Increased Brazed Joint Reliability," Department of Energy Phase I SBIR Contract No. DE-FG03-95ER82092, \$75,000, Jared L. Sommer, Ph.D., P.I., Awarded September 1995.
- "High Emissivity Arcjet Thruster Anodes," Air Force SBIR Phase II Contract No. F04611-95-C-0007, \$650,093, Jared L. Sommer, Ph.D., P.I., Awarded December 1994.
- "High Emissivity Arcjet Thruster Anodes," Air Force Phase I SBIR Contract No. F04611-93-C-0095, \$65,000, Jared L. Sommer, Ph.D., P.I., Awarded June 1993.
- "Novel High-Speed Steel Composite for Improved High Temperature and Mechanical Properties," NSF Phase I SBIR Grant No. III-9260411, \$50,000, Jared L. Sommer, Ph.D., P.I., Awarded January 1993.
- "Aluminum-Wettable Coatings on Graphite for Improved Brazed Joints," DOE Phase I SBIR Contract No. DE-FGO2-92-ER-81444, \$50,000, Jared L. Sommer, Ph.D., P.I., Awarded July 1992.

DEVELOPED ORIGINAL IDEA FOR THE FOLLOWING CONTRACTS:

- "Novel Ultracapacitor Electrodes for High Power Applications," DOE SBIR Contract No. DE-FG03-96ER82293, \$73,091, Joseph K. Weeks, P.I., Award August 1996.
- "High-Conductivity Composite Gun Barrel System," Navy Phase I SBIR Contract No. N00024-92-C-4332, \$54,650, J. K. Weeks, P.I., Awarded October 1992.
- "High-Conductivity Composite Gun Barrel System," Navy Phase II SBIR Contract No. N00024-95-C-4086, \$527,440, J. K. Weeks, P.I., Awarded January 1995.
- "Carbon/Carbon Composites with Refractory Metal Tubes Formed In-situ for Improved Heat Transfer," Air Force Phase I SBIR Contract No. F33657-93-C-2235, \$66,258, J.K. Weeks, P.I., Awarded June 1993.
- "Carbon/Carbon Composites with Refractory Metal Tubes Formed In-situ for Improved Heat Transfer," Air Force Phase I SBIR Contract No. F33657-93-C-2235, \$470,035, J.K. Weeks, P.I., Awarded October 1995.

SKILLS

- Broad background in the fabrication of metal-matrix composites and brazed joints
- Management of technical people and research budgets
- Creative in problem solving and in generating new research opportunities
- Excellent verbal and written communication skills
- Word processing and spreadsheets
- Experienced in finite element analysis

LANGUAGES

- JAPANESE- Lived throughout southern Japan (Kyushu/Okinawa) for two years (1980-1982). Familiar with Japanese language and culture. Japanese minor at Massachusetts Institute of Technology (1988-1989).

SELECTED PUBLICATIONS

- V.J. Michaud, J.L. Sommer, and A. Mortensen, "Infiltration of Fibrous Preforms by a Pure Metal: Part V. Influence of Preform Compressibility," *Metall. Mater. Trans. A*, v. 30, no. 2, Feb 1999, p. 471-482.

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- “Low-Cost, Low-CTE Heat Sink For Electronics,” High-Tech Materials Alert, v. 14, no. 6, John Wiley & Sons, Inc. Publishers. June 1997, pp. 7-8.
- “Copper/Graphite Composites Made with Metal Carbide Coatings,” NASA Tech Briefs, v. 21, no. 5 May 1997, pp. 36-37.
- Jared L. Sommer and A. Mortensen, "Forced Unidirectional Infiltration of Highly Deformable Porous Media," J. of Fluid Mechanics, v. 25, (3), 1996, pp. 193-217.
- Jared L. Sommer, J.K. Weeks, "Copper/Graphite Metal Matrix Composites for Improved Thermal Management of Electronic Devices," 125th Annual TMS Conference, 5 February 1996, Anaheim, CA.
- J.K. Weeks and J.L. Sommer "C/C Composites Incorporating Brazed Cooling Tubes," 19th Annual Conference on Composite, Materials, and Structures, Cocoa Beach, FL, 9 January 1995.
- Jared L. Sommer and J.K. Weeks, "High Conductivity Copper/Graphite Composites," 16th Annual Metal Matrix Composites Working Group Meeting, 1-3 February 1994, Park City, UT.
- D.C. Dunand, J.L. Sommer, and A. Mortensen, "Synthesis of Bulk and Reinforced Nickel Aluminides by Reactive Infiltration," Metall. Trans. A, 24A, No. 10, 1993, pp. 2161-2170.
- D.C. Dunand, J.L. Sommer, and A. Mortensen, "Reactive Infiltration of Nickel Preforms with Molten Aluminum," Processing and Fabrication of Advanced Materials for High Temperature Applications-II, V.A. Ravi and T.S. Srivatsan, eds., Published by The Minerals, Metals, and Materials Society (TMS), 1993.
- Jared L. Sommer and Joseph K. Weeks, "Copper/Graphite Composites for Space Radiator Applications," 15th Annual Discontinuously Reinforced M.C. Working Group Mtg., 2-4 February 1993, Park City, UT.
- Jared L. Sommer and Andreas Mortensen, "Infiltration of Liquids into Deformable Porous Media," 1991 TMS Fall Meeting, October 21-24, 1991, Cincinnati, OH.

INTERESTS AND ACTIVITIES

Piano, Oboe, Swimming, Volleyball, Community service, Classic Literature, Genealogy

REFERENCES

Available on request