

David John Hemmert
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Education:

United States Military Academy, West Point, New York
B.S., May 1987

Texas Tech University, Lubbock, Texas
M.S. in Applied Physics, May 1998
Thesis Topic: "Window and Cavity Breakdown Caused by High Power Microwaves"

Texas Tech University, Lubbock, Texas
Ph.D. in Electrical Engineering, August, 2002
Dissertation Topic: "Experimental Studies on Magnetic Field and Pressure Dependence of High Power Microwaves at a Dielectric Surface"

Various military training to include US Army ranger, US Army airborne, US Army Bradley Infantry Fighting Vehicle, and US Army Northern Warfare training.

Professional Experience Summary:

Eight years experience as a US Army infantry officer supervising, training, and managing soldiers. Six years as a graduate research assistant conducting research in high power microwaves. Five months as a visiting professor and researcher at a Japanese university. Six months as a senior research associate conducting research in explosive pulsed power at Texas Tech University. Three years as the principal investigator for various SBIR and STTR research to include ultra-compact, explosively generated pulsed power, active control of electromagnetic launchers, rocket propelled grenade countermeasures, enhancement techniques for flux compression generators, and characterization of ferroelectrics under shock compression loading.

Current Employment:

Currently the owner and chief scientist of HEM Technologies specializing in pulsed power research and technology.

Achievements:

Owner and Chief Scientist
HEM Technologies 2003-present

Principal Investigator for several SBIR Phase 1, an STTR Phase 1 and an SBIR Phase 2 awards. Manager of two full time and four part time employees, \$500,000 facility and equipment, and a \$500,000 budget.

Visiting Associate Professor
Kumamoto University, Kumamoto, Japan 2002-2003

Taught and assisted in teaching students in pulsed power and technical English. Conducted research on pulsed streamer discharges in water for algae control and bacterial decontamination; and power measurements on a high power microwave vircator.

Senior Research Associate
Texas Tech University 2002-2003

Conducted research on conductivity measurements under shock loading; needle breakdown studies for plasma limiters; and breakdown of various gases in high power microwaves at various pressures.

Graduate Research Assistant 1996-2002
Texas Tech University, Lubbock, TX

Conducted experimental research on high power microwave breakdown at interfaces. Conducted experimental research on plasma generated shock wave propagation. Conducted experimental research on metal conductivity under high strain rate compression of the metal.

Division Assistant Operations Officer 1995-1996
U.S. Army, Ft Bragg, NC

Assisted in set up and training of brigade and battalion staff teams for division training exercises.

Joint Operations Assistant Operations Officer 1995
U.S. Army, Port-au-Prince, Haiti

Assisted in planning and execution of day-to-day combat operations in Haiti for all forces under U.S. Forces Haiti.

Battalion Supply Officer 1994-1995
U.S. Army, Ft Bragg, NC

Brigade Assistant Operations Officer 1992-1994
U.S. Army, Ft Polk, LA

Platoon Team Trainer 1991
U.S. Army, Ft Irwin, CA

Platoon Leader 1989-1991
U.S. Army, Ft Irwin, CA

Platoon Team Trainer 1989
U.S. Army, Ft Irwin, CA

Platoon Leader 1988-1989
U.S. Army, Camp Hovey, Korea

Awards and Decorations:

Military awards: ranger tab, airborne badge, expert infantryman badge

Military decorations: Army Achievement Medal, Army Commendation Medal (3),
Joint Service Commendation Medal, Honorable Discharge

Peter J. Seibt Graduate Fellowship, 1998.

Selected Publications and Presentations: (over 25 total)

“Electrical Breakdown of Aluminum Powder in Shock-Wave Driven Pulsed Power Systems,” Directed Energy Professional Society Symposium, Huntsville, AL, Nov, 2007, proc to be published (with J. Krile, S. Holt)

“Development of an Ultra-Compact Explosively Driven MagneticFlux Compression Generator System,” Proc. 16th IEEE Intl Pulsed Power Conf, Albuquerque, NM, June, 2007, pg 1173. (with J. Krile, S. Holt, J. Walter, J. Dickens, L. Altgilbers, A. Stults)

“Testing of New Ferroelectric Elements Custom Engineered for Explosively Driven Ferroelectric Applications,” Proc. 16th IEEE Intl Pulsed Power Conf, Albuquerque, NM, June, 2007, pg 1177. (with S. Holt, J. Krile, W. Hackenberger, E. Alberta, J. Walter, J. Dickens, L. Altgilbers, A. Stults)

“Testing of new ferroelectric material for explosively driven pulsed power,” presented at the 2006 MegaGauss XI Conf, Imperial College, London, UK, Sep 2006, proc to be published (with S. Holt, J. Walter, J. Krile, W. Hackenberger, E. Alberta, J. Dickens, L. Altgilbers, A. Stults).

“Comparison of Ultra-Compact Seed Sources for MFCG’s,” Proc. 15th IEEE Intl Pulsed Power Conf, Monterey, CA., Jun 2005, pg 1353 (with J. Walter).

“Conductivity Measurements of Explosively Shocked Aluminum and OFHC Copper Used for Armature Material in a Magnetic Flux Compression Generator,” Proc, 14th IEEE Intl Pulsed Power Conf, Dallas, TX, June 2003, pg 1073, (with J. Mankowski, J. Rasty, J. Dickens, A. Neuber, and M. Kristiansen).

“Optical Diagnostics of Shock Waves Generated by a pulsed Streamer Discharge in Water,” Proc. 14th IEEE Intl Pulsed Power Conf, Dallas, TX, June 2003, pg 232, (with K. Shiraki, T. Yokoyama, S. Katsuki, H. Bluhm, and H. Akiyama).

“Microwave Magnetic Field Effects on High Power Microwave Window Breakdown,” IEEE Transactions on Plasma Science, Special Issue on High Power Microwave Generation, 28 472 (2000) (with A. Neuber, J. Dickens, H. Krompholz, L.L. Hatfield, and M. Kristiansen).

“Microwave Breakdown Studies of He-N₂ Mixtures in a Pillbox Cavity from 760 to 3040 Torr,” presented at the International Power Modulator Conference, Hollywood, CA, June, 2002 (with A. Neuber and J. Dickens).

“Field Enhanced Microwave Breakdown in Gas for a Plasma Limiter,” presented at the 29th IEEE International Conference on Plasma Science, Banff, Canada, May, 2002 (with A. Neuber, H. Krompholz, J. Mankowski, and D. Saeks).