ARGONNE NATIONAL LABORATORY
9700 South Cass Avenue, Argonne, Illinois 60439

Energy Technology Division

Research Summary Addendum • 2004

R. B. Poeppel, Division Director
W. J. Shack, Associate Division Director

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Energy Technology Division

This addendum to the *ET Research Summary 2004* contains a listing of the following for the past three years (April 2001 - April 2004):

- Publications (journal articles, conference papers, books and book chapters, and reports)
- Patents
- Honors and awards
- Professional society activities

Also included is a listing of present ET regular employees as of June 2004.

PUBLICATIONS

Computational Physics and Hydrodynamics Section

Journal Articles

On the Exploration of Innovative Concepts for Fusion Chamber Technology
M. A. Abdou et al.
Fusion Eng. & Design 54 (2001) 181-247.

Study of Brittle Destruction and Erosion Mechanisms of Carbon-Based Materials during Plasma Instabilities
T. Burtseva, A. Hassanein, et al.
J. Nucl. Mater. 290-293 (2001) 1059-1063.

Effect of Low/High Hydrogen Recycling Operation on Palladium Sputtering under Steady State Plasma Impact
G. P. Glazunov, E. D. Volkov, D. I. Baron, A. P. Dolgiy, A. L. Konotopskiy, A. Hassanein
Phys. Scr. T103 (2003) 89-92

Effect of Macroscopic Eroded Debris on Lifetimes of Plasma-Facing Components during Plasma Instabilities
A. Hassanein
Accepted for publication in *Fusion Eng. & Design.*

Prediction of Material Erosion and Lifetime during Plasma Instabilities in Tokamak Devices
A. Hassanein
Fusion Eng. Des. 60 (2002) 527-546

Hydrogen and Helium Recycling at Plasma Facing Materials: Proceedings of the NATO Advanced Research Workshop on Hydrogen Isotope Recycling at Plasma Facing Materials in Fusion Reactors, Argonne, Illinois
A. Hassanein, ed.
NATO Science Series II: Mathematics, Physics and Chemistry, Vol. 54 (2002).

Modeling and Key Issues of Plasma/ Surface Interactions in Future Tokamaks
A. Hassanein, ed.
Fusion Eng. & Des. (Special Issue) Vol. 60, No. 4 (2002).

Modeling and Key Issues of Plasma/ Surface Interactions in Future Tokamaks
A. Hassanein
Fusion Eng. & Des. 60 (2002) 493-96.

Modeling Hydrogen and Helium Entrapment in Flowing Liquid Metal Surfaces as Plasma-Facing Components in Fusion Devices
A. Hassanein
J. Nucl. Mater. 302 (2002) 41-48.

Hydrogen and Helium Entrapment in Flowing Liquid Metal Plasma-Facing Surfaces
A. Hassanein
J. Nucl. Mater. 307(pt. B) (2002) 1517-19.

Liquid Metal Targets for High-Power Applications: Pulsed Heating and Shock Hydrodynamics
A. Hassanein
Laser and Particle Beams, 18 (2001) 611-622.

New Mechanisms of Cluster Field Evaporation in rf Breakdown
A. Hassanein, Z. Insepov, and James H. Norem
Submitted to *Physical Review Letters* (2004).

Comprehensive Modeling of ELMS and Their Effect on Plasma-Facing Surfaces during Normal Tokamak Operation
A. Hassanein and I. Konkashbaev
J. Nucl. Mater. 313 (2003) 664-669.

Macroscopic Erosion of Plasma-Facing and Nearby Components during Plasma Instabilities: The droplet Shielding Phenomenon
A. Hassanein and I. Konkashbaev
J. Nucl. Mater. 290-293 (2001) 1074-1078.

New Critical Assessments of Chamber and Wall Response to Target Implosion in Inertial Fusion Reactors
A. Hassanein, V. Morozov, V. Tolkach, V. Sizyuk, and I. Konkashbaev
Fusion Eng. Des. 69(1-4) (2003) 781-87.

Heat and Particle Fluxes from Collisionless Scrape-Off-Layer during a Tokamak Disruption
A. Hassanein, et al.
J. Nucl. Mater. 290-293 (2001) 1079-1083.

MHD Problems in Free Liquid Surfaces as Plasma-Facing Materials in Magnetically Confined Reactors
I. Konkashbaev and A. Hassanein
Fusion Eng. Des. 61-62 (2002) 223-29.

Thermal Response of Tritiated Codeposits from JET and TFTR to Transient Heat Pulses
C. H. Skinner, N. Bekris, J. P. Coad, C. A. Gentile, A. Hassanein, R. Reiswig, and S. Willms
Phys. Scr. T103 (2003) 34-37

Physics Basis for the Fusion Ignition Research Experiment (FIRE) Plasma Facing Components
M. Ulrickson et al.
Accepted for publications in *Fusion Eng. & Design.*

Conference Papers

Candidate Plasma-Facing Materials for EUV Lithography Source Components
A. Hassanein, T. Burtseva, J. N. Brooks, I. Konkashbaev, and B. Rice
SPIE Microlithography 2003 Conference, Emerging Lithographic Technologies VII, Santa Clara, CA, February 23-28, 2003, Proc. Vol. 5037, pp. 358-69

Dynamics of Liquid Metal Jets Penetrating a Strong Magnetic Field
A. Hassanein and I. Konkashbaev
Proc. 2001 Particle Accelerator Conference (PAC01), Chicago, IL, June 18-22, 2001.

Thermoelastic Response of Suddenly Heated Liquid and Solid Targets for High Power Colliders
A. Hassanein, I. Konkashbaev, and J. Norem
Proc. 2001 Particle Accelerator Conference (PAC01), Chicago, IL, June 18-22, 2001.

A Laser Strain Gauge for Accelerator Targets
A. Hassanein and J. Norem
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HEIGHTS Initial Simulation of Discharge Produced Plasma Hydrodynamics and Radiation Transport for EUV Lithography
A. Hassanein, V. Sizyuk, V. Tolkach, V. Morozov, and B. Rice
SPIE Microlithography 2003 Conference, Emerging Lithographic Technologies VII, Santa Clara, CA, February 23-28, 2003 Proc. Vol. 5037, pp. 714-27.

Simulation and Optimization and DPP Hydrodynamics and Radiation Transport for EUV Lithography Devices
A. Hassanein, V. Sizyuk, V. Tolkach, V. Morozov, T. Sizyuk, B. Rice, and V. Bakshi
SPIE Microlithography 2004 Conference, Santa Clara, CA, Feb. 22-27, 2004.

Target Fueling by Diffusion Techniques in ICF Reactors
I. Konkashbaev and A. Hassanein
Proc. 10th Int. Workshop on Hydrogen Isotope Recycling in Fusion Reactors, Argonne National Lab, August 22-24, 2001.

The Primary Target Facility for a Neutrino Factory Based on Muon Beams
K. McDonald, A. Hassanein, et al.
Proc. 2001 Particle Accelerator Conference (PAC01), Chicago, IL, June 18-22, 2001.

Mechanisms Limiting High Gradient RF Cavities
J. Norem, A. Hassanein, and I. Konkashbaev
PAC 2003 Particle Accelerator Conf., Portland, OR, May 12-16, 2003.

DART-TM: A Thermomechanical Version of DART for LEU VHD Dispersed and Monolithic Fuel Analysis

R. Saliba, H. Taboada, Ma V. Moscarda (CNEA), and J. Rest

Paper presented at the 25th Intl. Mtg. on Reduced Enrichment for Research and Test Reactors, Chicago, Oct. 5-10, 2003.

Books Edited

Hydrogen and Helium Recycling at Plasma Facing Materials, NATO Science Series, II. Mathematics, Physics and Chemistry, Vol. 54

A. Hassanein

Proc. NATO Advanced Research Workshop on Hydrogen Isotope Recycling at Plasma Facing Materials in Fusion Reactors, Argonne Natl. Lab., Aug. 22-24, 2001; ed. A. Hassanein.

Reports

Plasma-Material Interactions in Current Tokamaks and their Implications for Next-Step Fusion Reactors

G. Federici et al.

Max-Planck-Institute for Plasma Physics (IPP) Report IPP 9/129, January (2001). Also Princeton Plasma Physics Laboratory Report PPPL-3531 (2001).

Modeling and Simulation of Fragmentation of Suddenly Heated Liquid Metal Jets

A. Hassanein and I. Konkashbaev

Argonne National Laboratory Report, ANL-ET/01-13 (May 2001).

Development of Comprehensive and Integrated Models for Inertial Fusion Cavity Dynamics

A. Hassanein and V. Morozov

Argonne National Laboratory Report, ANL-ET/02-04 (2002).

Physical Processes Controlling Dark Current Emission and Resulting Breakdown in Linacs

I. Konkashbaev and A. Hassanein

ANL-ET-CPH-03/18 (December 2003).

Hydrodynamic Phenomena of Gas-Filled Chamber due to Target Implosion in Fusion Reactors

V. Sizyuk and A. Hassanein

ANL-ET/02-26 (July 2002).

Development of Comprehensive Models for Opacities and Radiation Transport for IFE Systems

V. Tolkach, V. Morozov, A. Hassanein

ANL-ET/02-23 (July 2002).

Thermal and Electromechanics Section

Journal Articles

Transient Response of 50-KiloAmp YBCO Rings and Ring Pairs to Pulsed Magnetic Fields
T. R. Askew (Kalamazoo College) and Y. S. Cha
IEEE Trans. on Applied Superconductivity, Vol. 11, No. 1, March 2001, pp. 3947-3950.

Magnetic Diffusion and Dissipation in High-T_c Superconductors Subjected to Sinusoidal Applied Fields
Y. S. Cha
Physica C, Vol. 361, pp. 1-12 (2001).

Transient Characteristics of a High-T_c Superconductor Tube Subjected to Internal and External Magnetic Fields
Y. S. Cha and T. R. Askew (Kalamazoo College)
IEEE Trans. on Applied Superconductivity, Vol. 11, No. 1, March 2001, pp. 2485-2488.

Anomalously Thermal Conductivity Enhancement in Nanotube Suspension
S. U. S. Choi, Z. G. Zhang, W. Yu, F. E. Lockwood, and E. A. Grulke
Applied Physics Letters, vol. 79, no. 14, 2001, pp. 2252-2254.

A Novel Multiport Cylinder Dryer
Stephen U. Choi, Wenhua Yu, David M. France, and Martin W. Wambsganss
TAPPI Journal, vol. 84, no. 2, 2001, pp. 47.

Anomalously Increased Effective Thermal Conductivity of Ethylene Glycol-Based Nanofluids Containing Copper Nanoparticles
J. A. Eastman, S. U. S. Choi, S. Li, W. Yu, and L. J. Thompson
Applied Physics Letters, vol. 78, no. 6, 2001, pp. 718-720.

A Preliminary Study of Energy Recovery in Vehicles by Using Regenerative Magnetic Shock Absorbers
R. B. Goldner, P. Zerigian (Tufts U.); and J. R. Hull
Journal of Commercial Vehicles, Vol. 110, Sec. 2, pp. 53-59 (2002).

Applications of High-Temperature Superconductors in Power Technology
J. R. Hull
Rep. Prog. Phys, 66 (2003)1865-1886; on line http://stacks.iop.org/0034-4885/66/1865.

Improving Sintered NdFeB Permanent Magnets by Powder Compaction in a 9-T Superconducting Solenoid

T. M. Mulcahy, J. R. Hull; E. Rozendaal, J. H. Wise (Magnequench UG); and L. R. Turner (Vector Fields)

J. Appl. Phys. Vol. 93 (2003) 8680-8682.

Test Results of 2-kWh Flywheel Using Passive PM and HTS Bearings

T. M. Mulcahy, J. R. Hull, K. L. Uherka; R. A. Abboud, and J. Juna (UNICOM)

IEEE Trans. on Applied Superconductivity, Vol. 11, No. 1, March 2001, pp. 1729-1732.

Two-Phase Pressure Drop, Boiling Heat Transfer, and Critical heat Flux to Water in a Small-Diameter Horizontal Tube

W. Yu, D. M. France (U. of IL at Chicago), M. W. Wambsganss, and J. R. Hull

Intl. Journal of Multiphase Flow 28 (2002) 927-941.

The Role of Interfacial Layers in the Enhanced Thermal Conductivity of Nanofluids: A Renovated Maxwell Model

W. Yu and S. U.-S. Choi

Journal of Nanoparticle Research, vol. 5, 2003, pp. 167-171.

Single-Sided Steam Condensing inside a Rectangular Horizontal Channel

W. Yu, S. U.-S. Choi, D. M. France, and M. W. Wambsganss

International Journal of Heat and Mass Transfer, vol. 45, 2002, pp. 3715-3724.

Toward a Better Understanding of Friction and Heat/Mass Transfer in Microchannels-A Literature Review

N. T. Obot

Microscale Thermophysical Engineering 6 (2002) 155-173.

Smooth-and Enhanced-Tube Heat Transfer and Pressure Drop: Effect of Prandtl Number and the Role of Transition to Turbulence

N. T. Obot, L. Das (Clarkson U.) and T. J. Rabas

Intl. Journal of Heat Exchangers 3 (2002) 145-168.

Conference Papers

Transient Response of Single-Domain Y-Ba-Cu-O Rings to Pulsed Magnetic Fields

T. R. Askew, J. M. Weber (Kalamazoo College); Y. S. Cha, H. Claus, and B. V. Veal

IEEE Transactions on Applied Superconductivity, Vol. 13, No. 2, June 2003, pp. 3750-3754.

An Empirical Correlation for E(J,T) of a Melt-Cast-Processed BSCCO-2212 Superconductor Under Self Field

Y. S. Cha

IEEE Transactions on Applied Superconductivity, Vol. 13, No. 2, June 2003, pp. 2028-2031.

Development of Multiport Dryer Technology for the Forest Products Industry

S. U. Choi, W. Yu, R. C. Niemann, D. M. France, M. W. Morgan, T. H. Nicol, G. L. Timm, G. L. Wedel, M. Skelton, D. K. Barde, W. D. Vallance, and C. W. Stewart

Invited paper presented at the 2003 TAPPI Fall Technical Conf., Chicago, Oct. 26-30, 2003; Paper No. DOE Panel II 64-5 on Proc. CD.

Nanofluids for Vehicle Thermal Management

S. U. Choi, W. Yu, J. R. Hull; Z. G. Zhang, and F. E. Lockwood (Valvoline Co.)

Proc. VTMS5 - Vehicle Thermal Management Systems Conf., Nashville, TN, May 14-17, 2001, pp. 139-144; also SAE Trans. J. Passenger Cars: Mechanical Systems, Vol. 111 (1021) (2003), 38-43.

Nanofluids Can Take the Heat

Stephen U. S. Choi, Xianfan Xu, Pawel Keblinski, and Wenhua Yu

20th Symposium on Energy Engineering Sciences, Argonne National Laboratory, Argonne, Illinois, May 2002

Temperature and Frequency Effects in a High-Performance Superconducting Bearing

A. C. Day (Boeing Phantom Works); J. R. Hull; M. Strasik, P. E. Johnson, K. E. McCrary, J. Edwards, J. Mittleider, J. R. Schindler, R. A. Hawkins, and M. Yoder (Boeing Phantom Works)

IEEE Transactions on Applied Superconductivity, Vol. 13, No. 2, June 2003, pp. 2179-2184.

Electromagnetic Shock Absorbers

A. Gupta, T. M. Mulcahy and J. R. Hull

Paper presented at IMAC XXI: Conf. on Structural Dynamics, Kissimmee, FL, Feb. 3-6, 2003.

Losses of Superconductor Journal Bearing

Y. H. Han (Korea Electric Power Res. Inst.); J. R. Hull; S. C. Han, N. H. Jeong, J. M. Oh, and T. H. Sung (Korea Electric Power Res. Inst.)

Paper presented at the 2003 Cryogenic Engineering Conf. & Intl. Cryogenic Matls. Conf. (CEC/ICMC 2003), Anchorage, Sept. 22-26, 2003; to be published in Adv. Cryog. Engng.

Applications of Bulk High-Temperature Superconductors

J. R. Hull and M. Murakami

Submitted for publication as an invited contribution to Proc. IEEE (Sept 2003).

Characterization of a High-Temperature Superconducting Bearing for Use in a Cosmic Microwave Background Polarimeter

J. R. Hull; S. Hanany, T. Matsumura, B. Johnson, and T. Jones (U. of Minnesota)

Paper presented at PASREG 2003 - 4th Intl. Workshop on Processing and Applications of Superconducting (RE)BCO Large Grain Materials, Jena, Germany, June 30-July 2, 2003; to be published in Superconductor Science and Technology

Magnetically Levitated Space Elevator to Low Earth Orbit

J. R. Hull and T. M. Mulcahy

Proc. 3rd Intl. Symp. on Linear Drives for Industrial Applications, Nagano, Japan, Oct. 17-19, 2001, pp. 42-47.

Magnetically Levitated Space Elevator to Low Earth Orbit

J. R. Hull, T. M. Mulcahy and R. C. Niemann (IPNS)

Paper presented at Cryogenic Engr. Conf., Madison, WI, July 16-20, 2001.

Effect of Soot Loading on Thermal Characteristics of Diesel Engine Oil

Fran E. Lockwood, George Zhang, Steve U. Choi, and Wenhua Yu

Proc. VTMS5-Vehicle Thermal Management Systems Conf., Nashville, TN, May 14-17, 2001, pp. 205-211

A Superconducting Solenoid and Press for Permanent Magnet Fabrication

T. M. Mulcahy and J. R. Hull

IEEE Transactions on Applied Superconductivity, Vol. 13, No. 2, June 2003, pp. 1668-1671.

Smooth- and Enhanced-Tube Heat Transfer and Pressure Drop: Part I. Effect of Pradtl Number with Air, Water, and Glycol/Water Mixtures

N. T. Obot, L. Das (Clarkson U.), and T. J. Rabas

Proc. 3rd Intl. Conf. on Compact Heat Exchangers and Enhancement Technology for the Process Industries, Davos, Switzerland, July 1-6, 2001, pp. 187-197, eds. R. K. Shah, A. W. Deakin, H. Honda, T. M. Rudy, Begell House, Inc.

Smooth- and Enhanced-Tube Heat Transfer and Pressure Drop: Part II. The Role of Transition to Turbulent Flow

N. T. Obot, L. Das (Clarkson U.) and T. J. Rabas

Proc. 3rd Intl. Conf. on Compact Heat Exchangers and Enhancement Technology for the Process Industries, Davos, Switzerland, July 1-6, 2001, pp. 199-204, eds. R. K. Shah, A. W. Deakin, H. Honda, T. M. Rudy, Begell House, Inc.

Stable and Highly Conductive Nanofluids - Experimental and Theoretical Studies

W. Yu, J. R. Hull and S. U. Choi

Paper No. TED-AJ03-384 presented at the 6th ASME-JSME Thermal Engineering Joint Conf., Hawaii Islands, March 16-20, 2003.

Critical Heat Flux and Boiling Heat Transfer to Water in a 3-mm-Diameter Horizontal Tube
W. Yu, M. W. Wambsganss, J. R. Hull, and D. M. France (U. of Illinois at Chicago)
Proc. Vehicle Thermal Management Systems (VTMS5) Conf., Nashville, TN, May 14-17, 2001, pp. 679-685.

Analysis of Thermal Conductivity and Convective Heat Transfer in Nanotube Suspensions
Wenhua Yu and Stephen U.-S. Choi
Proceedings of IMECE'02, 2002 ASME International Mechanical Engineering Congress & Exposition, New Orleans, Louisiana, November, 2002

Book Chapters

Levitation Applications of High-Temperature Superconductors
J. R. Hull
Invited contribution to "Studies of High Temperature Superconductors," Vol. 48, ed. A. Narlikar.

Magnetic Levitation
J. R. Hull
Engineering Superconductivity, pp. 22-30 (2001), P. J. Lee, Ed., John Wiley & Sons, Inc. (New York).

Superconducting Bearings
J. R. Hull
Chapter 9.4 in "Properties, Processing, and Applications of YBCO and Related Materials," eds. W. Lo and A. M. Campbell, IEE Books, Stevenage, UK (2001).

Energy Storage Systems
J. R. Hull
Chapter 9.5 in "Properties, Processing, and Applications of YBCO and Related Materials," eds. W. Lo and A. M. Campbell, IEE Books, Stevenage, UK (2001).

Sensors, Instrumentation, and Nondestructive Evaluation Section

Journal Articles

Review of Electromagnetic NDE Methods for Monitoring the Degradation of Nuclear Reactor Components
V. Frankfurt (American NTN Bearing Manuf. Corp.) and D. S. Kupperman
Materials Evaluation Vol. 59, No. 9, pp. 1053-1057 (September 2001).

Millimeter-Wave Cavity Ringdown Spectroscopy
N. Gopalsami, A. C. Raptis and J. Meier
Review of Scientific Instruments, Vol. 73, No. 2 (2002), 259-262.

Development of Ultrasonic Sensor for Nonintrusive Measurement of Temperature in Powder Materials
N. Gopalsami, H.-T. Chien, W. Goldberger (Superior Graphite Co.), B. Merkle, and J. Borton
Powder Metallurgy, Vol. 45, No. 3 (2002).

Millimeter-Wave Radar Sensing of Airborne Chemicals
N. Gopalsami and A. C. Raptis
IEEE Trans. on Microwave Theory and Techniques, Vol. 49, No. 4, pp. 646-653, April 2001.

Steam Generator Mock-up for Assessment of Inservice Inspection Technology
D. S. Kupperman, S. Bakhtiari, and J. Muscara (USNRC)
Journal of Nuclear Engineering and Design, Vol. 207/3, pp. 299-305 (July 2001).

Spark-Discharge Ion Mobility Spectrometry for NO_X Detection
S. H. Sheen and A. C. Raptis
Submitted to the *Analytical Chemistry Journal*.

Conference Papers

Computer-Aided Analysis of Eddy Current Rotating Probe Data
S. Bakhtiari, J. Y. Park, D. S. Kupperman, and W. J. Shack
Proc. 4th CNS Intl. Steam Generator Conf., Toronto, May 5-8, 2002.

Assessing Condition of Turbine Engine Ceramic Components through NDE Technology
W. A. Ellingson, J. G. Sun, C. Deemer, S. Erdman, and C. Prested
Invited paper presented at the Intl. Conf. on Advances in Life Assessment and Optimization of Fossil Power Plants, Orlando, March 11-13, 2002.

Nondestructive Characterization of Environmental Barrier Coatings Applied to Monolithic Ceramics

W. A. Ellingson, C. Deemer, S. Erdman, and A. Parikh

ASME paper GT-2002-30645, 46th Intl. ASME Turbines and Aeroengine Technical Congress, Amsterdam, The Netherlands, June 3-6, 2002.

Volumetric X-Ray Imaging for Ceramic Microturbine Reports

W. A. Ellingson, E. R. Koehl, J. Stainbrook; and M. Rivers (U. of Chicago)

ASME paper GT-2002-30549, 46th Intl. ASME Turbines and Aeroengine Technical Congress, Amsterdam, The Netherlands, June 3-6, 2002.

Development of Nondestructive Evaluation Technology for High-Temperature Coatings

W. A. Ellingson, C. Deemer, A. Parikh, and S. Erdmann

Invited paper presented at 15th Annual U.S. Dept. of Energy Conf. on Fossil Energy Materials, Knoxville, TN, April 30-May 2, 2001.

Millimeter-Wave/Terahertz Detection Applied to Chemical and Biological Defense

N. Gopalsami, A. C. Raptis and A. B. Hull

Paper presented at the Second Joint Conf. on Point Detection for Chemical and Biological Defense, Williamsburg, VA, March 1-5, 2004.

Microwave Radar Detection of Gas Pipeline Leaks

N. Gopalsami, D. B. Kanareykin (AOZT Finn-Trade), V. D. Asanov (AOZT Finn-Trade), S. Bakhtiari, and A. C. Raptis

Paper presented at the 29th Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE), Western Washington University, Bellingham, WA, July 14-19, 2002.

Eddy Current Analysis Round Robin Using the NRC Steam Generator Mockup

D. S. Kupperman, J. Muscara (USNRC), S. Bakhtiari, J. Y. Park, and W. J. Shack

Proc. of the 4th Intl. Steam Generator Conf., Toronto, Canada, May 5-8, 2002.

Prediction of Failure Pressure and Leak Rate of Stress Corrosion Cracks

S. Majumdar, K. Kasza, J. Y. Park, and S. Bakhtiari

Paper presented at the 4th CNS Intl. Steam Generator conf., Toronto, May 5-8, 2002.

Failure Pressure and Leak Rate of Steam Generator Tubes with Stress Corrosion Cracks

S. Majumdar, K. Kasza, J. Y. Park, and S. Bakhtiari

Invited paper presented at the 10th Intl. Conf. on Nucl. Engr. (ICONE-10), Arlington, VA, April 14-18, 2002.

NdFeB Magnets Aligned in a 9-T Superconducting Solenoid

T. M. Mulcahy, J. R. Hull; E. Rozendaal, and J. H. Wise (Magnequench UG)

Paper presented at the Rare Earth Magnets and Their Applications, 17th Intl. Workshop, Newark, DE, Aug. 18-22, 2002

Research Perspectives on the Evaluation of Steam Generator Tube Integrity

J. Muscara (USNRC); D. R. Diercks, S. Majumdar, D. S. Kupperman, S. Bakhtiari, and W. J. Shack

Paper presented at the USNRC Water Reactor Safety Meeting, Bethesda, MD, Oct. 24-25, 2001.

Potential of the Acousto-Ultrasound Method to Characterize the Strength of Hot Gas Filter Materials

P. Pastila, A.-P. Nikkila, T. Mantyla (Tempere U. of Technology); W. A. Ellingson, E. R. Koehl, and D. Sandberg

Proc. 26th Ann. Intl. Conf. on Advanced Ceramics & Composites, Cocoa Beach, FL, Jan. 13-18, 2002.

Characterization of Hot Gas Filter Elements

P. Pastila, A.-P. Nikkila, T. A. Mantyla (Tempere U. of Technology); W. A. Ellingson, and E. R. Koehl

Paper presented at 7th European Ceramic Society Mtg., Brugge, Belgium, Sept. 9-13, 2001.

A Practical NO_X Sensor Based on Ion Mobility Spectrometry

S. H. Sheen, J. A. Jendrzejczyk, H.-T. Chien, A. C. Raptis; S. G. Ejakov, and J. H. Visser (Ford Res. Lab.)

Paper presented at 10th Intl. Conf. on Ion Mobility Spectrometry, Dortmund, Germany, Aug. 12-17, 2001.

Nondestructive Evaluation of Ceramic Matrix Composite Combustor Components

J. G. Sun; M. J. Verrilli (NASA Glenn Res. Ctr.); R. Stephan (Pratt & Whitney); T. R Barnett (Southern Res. inst.); and G. Ojard (United Technologies Res. Ctr.)

Paper presented at the 29th Annual Review of Progress in Quantitative Nondestructive Evaluation, Bellingham, WA, July 14-19, 2002.

Nondestructive Evaluation of Defects and Operating Damage in CFCC Combustor Liners

J. G. Sun, S. Erdman, R. Russel, C. Deemer, W. A. Ellingson; N. Miriyala, J. B. Kimmel, and J. R. Price (Solar Turbines, Inc.)

Paper presented at the 26th Ann. Intl. Conf. on Advanced Ceramics & Composites, Cocoa Beach, FL, Jan. 13-18, 2002.

Analysis of Quantitative Measurement of Defect by Pulsed Thermal Imaging

J. G. Sun

Paper presented at 28th Annual Review of Progress in Quantitative Nondestructive Evaluation, Brunswick, Maine, July 29-Aug. 3, 2001.

Thermal Imaging Detection and Characterization of Normal Cracks

J. G. Sun, C. Deemer, S. Erdman, and W. A. Ellingson

Paper presented at American Ceramic Society's 25th Ann. Intl. Conf. on Advanced Ceramics and Composites, Cocoa Beach, FL, Jan. 21-26, 2001; in Ceramic

Engineering and Science Proc., Vol. 22, Issue 3, pp. 237-243, 2001, eds. M. Singh and T. Jessen.

Subsurface Damage Measurement in Silicon Wafers by Laser Scattering
J. M. Zhang (Kansas State U.); J. G. Sun; and Z. J. Pei (Kansas State U.)
Trans. NAMRI/SME, Vol. 30, pp. 535-542 (2002).

Designed Experimental Study on Set-Up Parameters of Laser Scattering System
J. M. Zhang (Kansas State U.); J. G. Sun; and Z. J. Pei (Kansas State U.)
Paper presented at the North American Manufacturing Research Conf., NAMRC Thirty-One, Hamilton, Ontario, Canada, May 20-23, 2003.

Book Chapters

3.7. Nondestructive Evaluation Methods for CMC: Defect Characterization
W. A. Ellingson and C. Deemer
Invited chapter submitted for inclusion as part of MIL Handbook 17 to be published by the U.S. Department of Defense.

Progress Reports

Microtomographic Imaging of Ceramic Membranes and Other Structural Ceramics
W. A. Ellingson and M. Rivers
Contribution to the Advanced Photon Source Activity Report for 2001.

Advanced Sensors for Real-Time Control of Combustion in Advanced Natural Gas Reciprocating Engines
S. H. Sheen, H. T. Chien and A. C. Raptis
FY 2002 Annual Report (Dec. 2002).

Evaluation of Post-Exposure Properties of SiC/SiC Combustor Liners Tested in the RQL Sector Rig
M. J. Verrilli, T. R. Barnett, G. Baaklini, G. Ojard, and J. G. Sun
NASA Report: NASA/TM-2002-211380.

Topical Reports

Advanced Nondestructive Evaluation for Steam Generator Tubing
S. Bakhtiari, J. Y. Park, D. S. Kupperman, S. Majumdar, and W. J. Shack
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J. Andersson (Angstrom Lab.), R. A. Erck and A. Erdemir
Paper presented at the 10th Nordic Symp. on Tribology (Nordtrib 2002), Stockholm, June 9-12, 2002.

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C. Donnet (U. Jean Monnet, France) and A. Erdemir
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Laser Glazing of 1080 Steel Surface for Improved Tribological Properties
R. A. Erck, O. O. Ajayi, S. H. Aldajah, J. Hershberger, G. R. Fenske, and R. J. DiMelfi (Matls. Res. & Development)
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A. Erdemir

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Synthesis of Superlow Friction Carbon Films from Hydrogen-rich Acetylene Plasmas

A. Erdemir, O. L. Eryilmaz (Istanbul Technical U.), M. K. Kazmanli (Istanbul Technical U.), and G. R. Fenske

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K. C. Goretta, N. Chen, J. L. Routbort; G. C. Lukey, and J. S. J. van Deventer (The University of Melbourne)

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Solid-Particle Erosion of $ZrSiO_4$ Fibrous Monoliths

K. C. Goretta, F. Gutierrez-Mora, T. Tran, J. Katz, J. L. Routbort; T. S. Orlova (A. F. Ioffe Physico-Technical Inst.); and A. R. de Arellano-Lopez (University of Sevilla)

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F. Guiterrez-Mora (Universidad de Sevilla), D. Singh, N. Chen, K. C. Goretta, and J. L. Routbort

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J. Hershberger, O. O. Ajayi, Y. A. Bello, G. R. Fenske

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J. Hershberger, O. O. Ajayi, G. R. Fenske

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The Effect of Laser Texturing of Steel Surfaces and Speed-Load Parameters the Transition of Lubrication Regime from Boundary to Hydrodynamic

A. Kovalchenko, O. O. Ajayi, A. Erdemir, G. R. Fenske, and I. Etsion (Technion)

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D. Singh, F. Guiterrez-Mora (Universidad de Sevilla), N. Chen, K. C. Goretta, and J. L. Routbort

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J. Wolfenstine (U.S. Army Research Lab.); K. C. Goretta, J. L. Routbort; and A. Petric (McMaster U.)

Paper presented at 2001 Joint Intl. Mtg., the 200th Mtg. of the Electrochemical Soc., Inc., and the 52nd Mtg. of the Intl. Soc. of Electrochemistry, San Francisco, Sept. 2-7, 2001.

Published Reports

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Irradiation Performance and Hot Cell Facilities Sections

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Performance of V-4Cr-4Ti Materials Exposed to the DIII-D Tokamak Environment
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Status of LOCA Research in the High Burnup Cladding Performance Program
M. C. Billone, R. V. Strain and Y. Yan
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A. S. Wagh and S. Y. Jeong
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A. S. Wagh and S. Y. Jeong
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U. Balachandran, S. E. Dorris, B. Ma, and M. Li
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Fanmod: A Simple Model Simulating a Fan as a Source of Axial and Circumferential Body Forces

C. Tzanos and T. H. Chien

FANMOD Software (ANL-SF-02-040), Registration #TXu-1-083-043, copyright registered 12/11/02.

Hydrogen Production by High-Temperature Water Splitting Using Electron Conducting Membranes

T. H. Lee, S. Wang, S. E. Dorris, and U. Balachandran

Invention Report ANL-IN-01-139. U.S. Patent No. 6,726,893, issued 4/27/04.

Large Area Bulk Superconductors

D. J. Miller and M. B. Field

U.S. Patent No. 6,410,487 issued 6/15/02.

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S. E. Dorris, T. Lee, and U. Balachandran

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T. Truchan, D. Miller, K. C. Goretta, U. Balachandran, and R. Foley (U. of IL)

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Method and Apparatus for Producing Phase Change Ice Particulate Perfluorocarbon Slurries

K. E. Kasza

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Method and Apparatus for Automated Thermal Imaging of Combustor Liners and Other Products

J. G. Sun, W. A. Ellingson and C. M. Deemer

Invention Report ANL-IN-00-051, 2000. U.S. Patent Application S-95,915. U.S. Patent No. 6,517,236 issued 02/11/03.

Method for Fabricating ^{99}Mo Production Targets Using Low Enriched Uranium, ^{99}Mo Production Targets Comprising Low Enriched Uranium

T. Wiencek, J. E. Matos and G. L. Hofman

Invention Report ANL-IN-01-103. DOE Case No. S-89,009. U.S. Patent No. 6,160,862 issued 12/31/2000.

Method for Fabricating Ceramic Composites

K. C. Goretta, D. Singh, B. Polzin, T. Cruse, and J. J. Picciolo

Invention Report ANL-IN-99-039, 05/19/99. DOE File No. S-93,250. U.S. Patent No. 6,403,018 issued 6/11/02.

Method for Preparing High Temperature Superconductor

U. Balachandran and M. P. Chudzik

Invention Report ANL-IN-00-042, 4/27/00. U.S. Patent Application filed 07/20/2000. U.S. Patent No. 6,361,598 issued 03/26/02.

Method for the Decontamination of Metallic Surfaces

A. Purohit, M. D. Kaminski and L. Nunez

Invention Report ANL-IN-98-117. U.S. Application S-97,107. U.S. Patent No. 6,504,077 issued 01/07/03.

Method of Generating Hydrogen by Catalytic Decomposition of Water

U. Balachandran, S. E. Dorris, A. C. Bose (NETL/DOE), G. J. Stiegel (NETL/DOE), and T. H. Lee

Invention Report ANL-IN-99-015. DOE Case No. S-92,275. U.S. Patent Application filed 06/09/2000. U.S. Patent No. 6,468,499 issued10/22/02.

Method to Produce Ultra-low Friction Carbon Films

A. Erdemir, G. Fenske, O. L. Eryilmaz, and R Lee

United States Patent # 6,548,173 (2003)

Method to Remove Ammonia Using a Proton-Conducting Ceramic Membrane

U. Balachandran and A. C. Bose

Invention Report ANL-IN-99-027B. DOE Case No. S-98,098. U.S. Patent No. 6,630,116 issued 10/7/03.

Methods and Apparatus for Producing Phase Change Ice Particulate Saline Slurries

K. E. Kasza

Invention Report ANL-IN-99-062b. DOE File No. S-95,904. U.S. Patent No. 6,413,444 issued 07/02/02.

Multiport Cylinder Dryer with Low Thermal Resistance and High Heat Transfer

S. U. Choi

Invention Report ANL-IN-96-009. DOE Case No. S-86,200. U.S. Patent No. 6,397,489 B1 issued on 6/4/2002.

Optical Method and Apparatus for Detection of Defects and Microstructural Changes in Ceramics and Ceramic Coatings

W. A. Ellingson, J. A. Todd, and J. G. Sun

Invention Report ANL-IN-99-053, 06/11/99. DOE File No. S-93,291. U.S. Patent No. 6,285,449 issued 09/04/01.

Shielded High-T_c BSCCO Tapes or Wires for High Field Applications

U. Balachandran, M. Lelovic and N. G. Eror

Invention Report ANL-IN-97-045b. U.S. Patent No. 6,466,805 issued 10/15/02.

Shielded High-T_c BSCCO Tapes or Wires for High Field Applications

U. Balachandran, M. Lelovic, and N. G. Eror (U. of Pittsburgh)

Invention Report ANL-IN-97-045, 04/97. DOE File No. S-89,093. U.S. Patent No. 6,253,096 issued 6/26/01.

Thermal Imaging Measurements of Lateral Diffusivity and Non-Invasive Material Defect Detection

J. G. Sun and C. M. Deemer

Invention Report ANL-IN-00-004. DOE File No. S-95,159. U.S. Patent No. 6,517,238 B2 issued 02/11/2003.

Thermomechanical Means to Improve the Critical Density of BSCCO Tapes

U. Balachandran, R. B. Poeppel, P. Haldar (IGC), and L. Motowidlo (IGC)

Invention Report ANL-IN-92-059 and ANL-IN-93-027 (combined). DOE File No. S-77,480 and S-79-247. U.S. Patent No. 6,240,619 issued 6/5/01.

Ultra Low Friction Carbon/Carbon Composites for Extreme Temperature Applications

A. Erdemir

Invention Report ANL-IN-96-073, 05/15/96. U.S. Patent No. 6,255,234 issued 07/03/01.

Ultrasonic Gas Analyzer and Method to Analyze Trace Gases

S. H. Sheen, H. T. Chien, and A. C. Raptis

Invention Report ANL-IN-98-040, 06/03/98. DOE File No. S-91,205. U.S. Patent No. 6,279,378 issued 8/28/01.

Method to Produce Ultra-low Friction Carbon Films

A. Erdemir, G. Fenske, O. L. Eryilmaz, and R Lee

United States Patent 6,548,173.

HONORS AND AWARDS

S. Baumann, R. R. Fabian, D. J. McGann, and D. Peterson (ER)

Recipient of Pacesetter Award for Extraordinary Effort Working as a Team to Overcome Technical and Administrative Challenges and Meet Tight Schedule Associated with Generating, Reviewing, and Ensuring Approval of 23 Detailed, Step-by-Step Procedures for the Alpha -Gamma Hot Cell Facility, July 8, 2003.

T. S. Bray

Member, Beta Gamma Sigma National Business Honor Society (November 2001).

M. Castro, B. Herdt, M. Farmer, B. Banez (RAE); L. Essenmacher, G. Quick, J. Dobrzynski, D. McGann, N. Hins, F. Pausche, J. Lucas (ET); W. Stigberg, L. Sprouse, S. Yan, and M. Sreniawski (PBCS)

Recipient of Pacesetter Award for Exceptionally Effective Teamwork while Refurbishing Four Shield Windows at the Alpha Gamma Hot Cell Facility, July 8, 2003.

T. H. Chien

Recipient of Certificate of Appreciation in Recognition of a Substantial Contribution to the 2002 SAE World Congress, presented by the Thermal Systems Management Activity.

S. U. Choi

Who's Who in the World, 20th Edition, Marquis Who's Who, New Providence, NJ (2002).

S. U. Choi

Who's Who in America, 57th Edition, Marquis Who's Who, new Providence, NJ (2002).

S. U. Choi

Who's Who in the World, 19th Edition, Marquis Who's Who, New Providence, NJ, 2001.

S. U. Choi

Who's Who in America, 56th Edition, Marquis Who's Who, New Providence, NJ, 2001.

S. U. Choi

Who's Who in Science and Engineering, 6th Edition, Marquis Who's Who, New Providence, NJ, 2001.

R. Clark, L. Knoblich, L. Sprouse, T. Wiencek, and S. Yan

Recipient of Pacesetter Award for Extraordinary Effort Working as a Team to Achieve a Massive Clean-out of the Bldg. 212 H-Wing High Bay, Aug. 20, 2003.

D. R. Diercks, J. E. Franklin and S. Majumdar
Recipient, Laboratory Director's Award for FY 1999, June 28, 2001.

W. A. Ellingson
Recipient of Certificate of Recognition for Fostering Excellence in Research through Commitment to Mentoring Young Scientists and Scholars, presented by the Illinois Mathematics and Science Academy, April 25, 2001.

W. A. Ellingson and J. G. Sun
Recipient of a 2001 Research Partnership Award from the U. S. Department of Energy (2001).

A. Erdemir
Invited keynote speaker at the Graduation Ceremony of the Istanbul Technical University, Turkey, June 9, 2003.

A. Erdemir
Fellow, Society of Tribologists and Lubrication Engineers, 2003 to present.

A. Erdemir
Recipient of the "Al Sonntag Award" for best paper on solid lubricants published by STLE, 2002 entitled "Dry Lubricant Films for Aluminum Forming."

A. Erdemir
Recipient of Pacesetter Award for organizing NATO Advanced Research Workshop on Hydrogen Isotope Recycling at Plasma Facing Materials in Fusion Reactors, August 22-24, 2001.

A. Erdemir
Recipient of the Allan A. Manteuffel Award presented by the Chicago Section of STLE, April 18, 2002.

A. Erdemir
Recipient of the 2002 Al Sonntag Award presented for paper entitled "Dry Lubricant Films for Aluminum Forming," by the STLE Board of Directors, Houston, May 21, 2002.

A. Erdemir
Recipient, Certificate of Appreciation in presenting the Awards Luncheon address, STLE/ASME Tribology Conf., San Francisco, Oct. 23, 2001.

Y. Gogotsi, M. J. McNallan and A. Erdemir
Recipient, 2003 R&D 100 Award, for Nanostructured Carbide Derived Carbon (July 2003).

N. Gopalsami, H.-T. Chien, W. Lawrence; B. Merkle, and J. Borton (Superior Graphite Co.)

Honorable mention in "Sensors and Photonics" for a sensor measuring temperatures in hostile environments. Award given by the Midwest Section of the Federal Laboratory Consortium (2001).

N. Gopalsami

Honorable mention from Midwest FLC for "Sensors Measuring Temperature Nonintrusively in Hostile Environments," with Superior Graphite Co. (2001).

A. B. Hull, V. L. Shah and S-W. Tam

Recipient of Pacesetter Award for extraordinary effort in supporting the NRC in reviewing the license renewal applications for the Peach Bottom (license renewed), St. Lucie, V. C. Summer, Dresden and Quad Cities Nuclear Power Plants, and for the continuing and concurrent contributions to other NRC and/or non-NRC work.

J. R. Hull

Recipient, 2001 Pasreg Award of Excellence for Outstanding Contributions to the Development of Bulk High-Temperature Superconductors, July 13, 2001.

K. E. Kasza and R. B. Poeppel

Recipient of The Emergency Resuscitation Center Award for exemplary dedication to interdisciplinary research and collaboration at the U. of Chicago and Argonne National Laboratory, June 13, 2002.

W. Kettman

Recipient of Outstanding Service Award from the University of Chicago Board of Governors, July 12, 2001.

B. Ma

Recipient, Young Investigator Award, High-Temperature Superconductivity for Electric Power Systems, sponsored by the Office of Energy Efficiency and Renewable Energy, Office of Power Technologies 2001 R&D Award, Dec. 13, 2001.

D. P. McGann, D. J. McGann, L. Essenmacher, J. Dobrzynski, G. Quick, and T. Wiencek

Recipient of the 2002 WM&P2 Spirit Award (Nov. 2002).

D. Preuss, S. Baumann, D. J. McGann, D. Engel, and E. O'Hare

Recipient of Pacesetter Award for Successful Refurbishment of Four Shield Windows at the Alpha-Gamma Hot Cell Facility, July 8, 2003.

S.-H. Sheen, H.-T. Chien, A. C. Raptis, W. Lawrence; and C. Philips (Natl. Center for Manufacturing Sciences)

Honorable mention in "Sensors and Photonics" for an "SOS" (Speed of Sound) Leak Detector. Award given by the Midwest Section of the Federal Laboratory Consortium (2001).

J. P. Singh

Recipient, 2004 ECD James Mueller Memorial Award from the Engineering Ceramics Division of the American Ceramic Society; award to be presented in Cocoa Beach, FL, January 2004

Y. Yan

Selected for "Who's Who in Science and Engineering - 6th Edition," 2001-2002, Marquis WHO's WHO, USA.

Y. Yan

Selected for "Who's Who in America - 56th Edition," 2001-2002, Marquis WHO's WHO, USA.

PROFESSIONAL SOCIETY ACIVITIES

S. Bakhtiari
Senior Member, The Institute of Electrical and Electronics Engineers

U. Balachandran
Fellow, American Ceramic Society, April 1999-present.

U. Balachandran
Program Committee, Applied Superconductivity Conference, 2002.

U. Balachandran
Nominating Committee, Applied Superconductivity Conference, 2004.

U. Balachandran
Member, Intl. Cryogenic Materials Conf. (ICMC) Board of Directors, 1999-present.

U. Balachandran
Overseas Coeditor, Journal of Materials Transactions, Japan Institute of Metals, 2000-present.

U. Balachandran
Member, North American Board of Superconductor Science and Technology, 2001-present.

U. Balachandran
Editorial Board, Journal of Materials Physics and Mechanics, 2001-present.

Y. S. Cha
Member, ASTM Committee E05.13, Task Group 9, 2000 to present.

O. K. Chopra
Member, ASME Section XI Task Group on Operating Plant Fatigue Assessments 2001-present.

W. A. Ellingson
Chairman, Nondestructive Testing & Evaluation, "Composite Materials," U.S. Dept. of Defense MIL Handbook 17, Aug. 7, 1996 to present.

W. A. Ellingson
Fellow, American Ceramic Society (1993); member since 1974.

W. A. Ellingson

Member, Committees C28 on Advanced Ceramics and E07 on Nondestructive Testing, American Society for Testing and Materials.

W. A. Ellingson

Fellow, American Society of Mechanical Engineers, 1985-present.

A. Erdemir

Chair and Coordinator of the Technical Committees and Industry Councils of the Society of Tribologists and Lubrication Engineers, 2003-present.

A. Erdemir

Member, Award Committee, American Society of Mechanics/Engineers, 2002 to present.

A. Erdemir

Fellow, ASM International, November 2001 - present.

A. Erdemir

Chairman, 2001 Annual Meeting Program of the Society of Tribologists and Lubrication Engineers, Orlando, May 20-24, 2001.

A. Erdemir

Member, Organizing Comm. of Intl. Conf. on Metallurgical Coatings and Thin Films, 1992 to present.

A. Erdemir

Member, Res. Comm. on Tribology, Amer. Soc. of Mechanical Engineering, May 1995 to present.

A. Erdemir

Program Chair, World Tribology Congress, 2005, Washington D.C.

A. Erdemir

Chair and Coordinator, Technical Committees and Industry Councils of the Society of Tribologists and Lubrication Engineers, 2003-present.

A. Erdemir

Member, Award Committee, American Society of Mechanical Engineers, 2002 to present.

A. Erdemir

Member, Executive Committee, Chicago Section, Society of Tribologists and Lubrication Engineers, 2003 to present.

R. A. Erck

Member, Annual Mtg. Program Committee, Society of Tribologists and Lubrication Engineers, May 2000 to present.

R. A. Erck

Secretary, Ceramics and Composites Section, Society of Tribologists and Lubrication Engineers (5/00 - 5/01).

N. Gopalsami

Reviewer, IEEE Instrumentation and Measurement Technology Conf., Vail, CO, May 20-22, 2003.

N. Gopalsami

Senior Member, The Institute of Electrical and Electronics Engineers, Inc., March 1995 to present.

A. Hassanein

Co-chair, 11th Int. Advanced Workshop on Hydrogen Recycling at Plasma Facing Components, University of Tokyo, May 13-16, 2002.

A. Hassanein

Member, International Program and Advisory Committees: (1) Hydrogen Isotopes in Fusion Reactor Materials, (2) International Innovative Concepts for Plasma-Interactive Components in Fusion Devices, and (3) Interaction of Hydrogen Isotopes with Structural.

J. R. Hull

Vice Chair, ASME Superconductivity Tech. Comm., 1994-2002.

J. R. Hull

Fellow of American Society of Mechanical Engineers, 1996-present.

J. R. Hull

Senior Member of Institute of Electrical and Electronics Engineers, Inc., Nov. 1993-present.

Jacqueline Johnson

Committee member for the Selection of the Warren Award recipient for the American Crystallographic Association (2002).

D. Y. Kaufman

Member, Sigma Xi, The Scientific Research Society, 1997-present.

D. S. Kupperman

Fellow, Amer. Soc. for Nondestructive Testing.

K. Natesan

Fellow of National Association of Corrosion Engineers (NACE), Dec. 1996 to present.

R. B. Poeppel

Member, Sigma Xi, 1986-2002.

J. L. Routbort

Session Chair, 103rd Annual Mtg. of the American Ceramic Society, Indianapolis, April 24-27, 2001.

Jules Routbort

Chair of the Engineering Conferences International Conference Committee (Jan 2004 – present) and member of the board of the Engineering Conferences Foundation.

J. P. Singh

Member, Nominating Committee, The American Ceramic Society, 2001-present.

J. P. Singh

Member, Nominating Committee, American Ceramic Society, 2001-2002.

J. P. Singh

Member, John Jeppson Awards Committee, American Ceramic Society, 1998-present.

J. P. Singh

Fellow of Amer. Ceram. Soc., Dec. 1993-present.

REGULAR ET EMPLOYEES

Administration

Staff

R. B. Poeppel, Division Director
W. J. Shack, Associate Division Director
A. C. Smith, Building Manager, 212 and
Environmental Compliance Officer
P. E. Domagala, Computer Systems Administrator
R. M. Hoff++, MS Windows Systems Admin.
M. P. Leyson, Assoc. Systems Administrator
J. Nelson, Unix Systems Administrator
R. C. Schmitt, Computer Scientist
B. H. Malak, Financial Administration
J. Harmon, Senior Writer/Editor
R. R. Fabian, QA Representative
K. C. Goretta

Salaried

B. K. Baudino
R. N. Lanham
J. L. Toenies

Hourly

V. A. Martinez
C. V. Garcia++
E. A. Moravek, TRP

May 11, 2004

Energy Technology Division

	Ceramics	Corrosion and Mechanics of Materials	Tribology
Staff	U. Balachandran	K. Natesan	G. R. Fenske
	R. Baurceanu**	B. Alexandreanu**	O. Ajayi
	L. Chen**	O. K. Chopra	S. Aldajah**
	S. E. Dorris	H. M. Chung	R. A. Erck
	B. L. Fisher	S. Majumdar	A. Erdemir
	D. Y. Kaufman	J. H. Park	O. L. Eryilmaz**
	R. E. Koritala++	J. Y. Park	J. G. Hershberger
	T. H. Lee	W. K. Soppet	J. A. Johnson
	B. Ma	Z. Zeng++	J. Routbort
	J. J. Picciolo		J. B. Woodford
	J. P. Singh		
	S.-J. Song**		
	S. P. Srinivasan**		
	K. K. Uprety**		
	A. Wagh		
	T. Wiencek		
Salaried		J. Franklin	
Hourly			
Technicians	J. E. Emerson	R. W. Clark	
	R. L. McDaniel	T. M. Galvin	
		L. Knoblich	
		E. J. Listwan	
		D. L. Rink	
		J. C. Tezak	
Secretary	S. M. Hagamann*	S. M. Hagamann*	D. K. Moores

Energy Technology Division

	Irradiation Performance	Hot Cell Facilities	Thermal and Electromechanics
Staff	M. C. Billone	T. S. Bray	J. R. Hull
	T. A. Burtseva# R. S. Daum H. C. Tsai Y. Yan	S. Baumann	Y. S. Cha F. C. Chang S. U. Choi K. E. Kasza N. T. Obot W. Yu
Salaried		D. J. McGann	
Technicians	L. Cairo J. P. Dobrzynski L. F. Essenmacher D. P. McGann D. O. Pushis G. P. Quick		J. W. Lucas R. K. Smith A. S. Wantroba
Secretary	S. M. Hagamann*	S. M. Hagamann*	J. A. Stephens

Energy Technology Division

	Computational Physics & Hydrodynamics	Sensors, Instrumentation & NDE	Aging Management & Transportation of Hazardous Materials
Staff	A. M. Hassanein	A. C. Raptis	Y. Y. Liu
	J. P. Allain	S. Bakhtiari	R. R. Fabian
	J. N. Brooks	H.–T. Chien	V. N. Shah
	Z. Insepov#	C. M. Deemer**	S.-W. Tam
	I. Konkashbaev++	W. A. Ellingson	
	V. A. Morozov	N. Gopalsami	
	M. Nieto**	A. B. Hull	
	V. A. Sizyuk	E. R. Koehl	
	V. A. Titov#	D. S. Kupperman	
	J. Rest	J. J. Oras	
		S. H. Sheen	
		D. Singh	
		J. G. Sun	
Salaried		R. N. Lanham	
Technicians		C. W. Vulyak, Jr.	
Secretary	R. P. Foote*	J. L. Carlson	R. P. Foote*
Hourly		J. B. Meagher++	

*Assigned to more than one section, **Post Doc Appointment, ++Term Appointment
TRP (Temp. Resource Pool), #Visiting Scientist Appointment