

GEORGE T. (Rusty) GRAY III

(505) 667-5452 (Work)
e-mail: rusty @lanl.gov

WORK EXPERIENCE:

September 2012 - present Scientist 6
September 2002 – present Laboratory Fellow
Jan. 1985 – Sept. 2003: Team Leader and Technical Staff Member
Dynamic Materials Properties Section
Structure / Property Relations, MST-8
LOS ALAMOS NATIONAL LABORATORY

I have conducted independent research on the structure/property relationships during the deformation of materials, in particular in response to high-strain-rate and shock deformation. My research has focused on utilizing high-rate Split-Hopkinson bar and shock recovery experiments as part of an interdisciplinary research team combining real-time experiments, theoretical modeling, and post-shock material studies to investigate defect generation and storage during high-strain rate, shock loading, damage evolution, spallation, and fragmentation. I have developed and promoted the use of "soft" shock recovery techniques for systematically studying the influence of shock-wave loading parameters on post-shock material response. The generation of unique defect structures, such as deformation twins, microbands, and pressure-induced phase products (such as ω -phase in Ti, Zr, and Hf), remains an active topic of my research. I have promoted dynamic structure / property research on materials and worked to further the development of dynamic materials and condensed matter research within the materials and physics communities, DOE, the DoD, and industry.

Jan. 1982 - Nov. 1984: Post-doctoral Fellowship
TECHNISCHE UNIVERSITAET HAMBURG-HARBURG
Metallurgy and Materials Technology
Eißendorfer Straße 42, 2100 Hamburg 90, West Germany

Investigated the influence of microstructure, oxygen content, and mean stress on the fatigue crack initiation, crack propagation and fracture toughness of Ti-8.6Al. Examined the role of microstructure, environment, and mean stress on the fatigue crack propagation of Ti-6Al-4V.

EDUCATION:

Sept. 1977 - Dec. 1981: CARNEGIE-MELLON UNIVERSITY, Pittsburgh, PA
Ph.D. in Metallurgical Engineering, 1981

Ph.D. program sponsored by the Association of American Railroads Thesis:
"The Effect of Microstructure on the Initiation and Propagation of Fatigue Cracks in Fully Pearlitic Steels"

Sept. 1972 - Aug. 1977: SOUTH DAKOTA SCHOOL OF MINES & TECHNOLOGY
BS with honors in Metallurgical Engineering, 1976
MS in Metallurgical Engineering, 1977

PROFESSIONAL

INFORMATION:

Visiting Scholar at UCSD, April - June, 1990. Conducted collaborative research with Professors Sia Nemat-Nasser, Marc Meyers, and Ken Vecchio in the areas of high-rate deformation and substructure evolution.

I have served in a number of capacities working with universities as an external examiner and co-advisor for a number of graduate students:

- a) external committee member for 4 Ph.D.candidates at UCSD.
- b) external examiner for Ron Howard Ph.D. thesis on high-rate erosion of Ti-aluminides - Univ. of South Africa @ Cape Town (advisor Professor Tony Ball).

Member of 1991 Visiting Committee for Metallurgy and Materials Science Department - Carnegie Mellon University. Evaluate current department programs and provide recommendations for department.

July, 1991 - Served on two National Science Foundation MRG Site Visit Teams at California Institute of Technology

1991/92 - Chairman of Los Alamos Chapter of ASM International.

Recipient of 1988 Los Alamos National Laboratory Individual Distinguished Performance Award

Since May 1994 – 1996: appointment as a Visiting Research Scientist with the AMES Department at UCSD

1996-1997 - Member of National Academy – NRC- Transportation Research Board Committee on Fiber Drum Packaging for Transporting Liquid Hazardous Materials

Recipient of 1997 Los Alamos National Laboratory Fellows Prize

October 1997 - **Elected Fellow of ASM International**

Recipient of a 1997 LANL Award for Excellence in Technology Transfer

Awarded Visiting Fellow at Clare Hall, Cambridge University; U.K. - extended travel to conduct research at Cambridge (summer 1998)

Elected Life Member Clare Hall, Cambridge University, U.K. (Nov. 1998)

July 2000 - Co-Chaired Physical Metallurgy Gordon Conference

July 2000 to May 2002 – serve on LANL Director (John Browne) Nuclear Weapon Certification Advisory Committee

Feb. 2001 to March 2003 - Chair of Structural Materials Division – served on the TMS Board of Directors

February 2002 – Awarded TMS Structural Materials Division 2002 Distinguished Scientist / Engineer Award

Sept. 2002 – **named Fellow of Los Alamos National Laboratory**

December 2002 to May 2004 – served on National Academy NRC Study panel on “Virtual Design and Manufacturing”

December 2003 to 2008 – served on the National Academy NRC panel on “Assessing the Utility of a National Ballistics Database”

2004-2005 – Chair of Board of Reviewers – Metal. & Matls. Transactions

2005-2008 – Director of Publications on Board of Directors of TMS

February 2005 – Awarded the TMS Structural Material Division’s 2005 Distinguished Service Award

Sept. 2005 – Sept. 2006 – Elected as Coordinator of LANL Fellows

November 2006 – **Elected Fellow of the American Physical Society(APS)**

June 2007 – selected by BES management to be a Co-Panel Chair for the DOE-BES Workshop on “Materials under Extreme Environments”

June 2007 – 2009: Named Adjunct Professor – The Ohio State University – Materials Science and Engineering Department

January 2008 – 2013 – Served on National Academies - National Materials Advisory Board (NMAB) / National Materials Manufacturing Board (NMMB)

July 2009 – 2011: Chair of NRC Panel on Armor and Armaments, which annually reviewed the work at the Army Research Laboratory’s Weapons and Materials Research Directorate

Feb. 2010-2011 – **President of The Minerals, Metals, and Materials Society (TMS) – Vice-President (2009, Past-President (2011-2012))**

2010-2012 – Served on National Academy NRC Panel on “Benchmarking the Technology and Application of Lightweighting”

August 2010 - 2013 – Named to serve on National Academy – Defense Materials, Manufacturing, and Infrastructure Board (DMMI) – under the National Materials Manufacturing Board (NMMB)

July 2012 – present - Chairman of the Board of Governors of Acta Materialia, Inc. – oversees publication of Acta Materialia, Scripta Materialia, Acta BioMaterialia, and Materialia Scientific Journals

December 2012 – 2018: Chaired NRC Panel on Ballistics, this panel annually reviews all Fundamentals and Engineering Ballistics Programs at the Army Research Laboratory (ARL)

February 2013 – **Inducted as Fellow of TMS (The Minerals, Metals, and Materials Society)**

May 2013 – 2017 Served on Instit. for Matls. Advisory Panel – Georgia Tech

October 2017 – **Inducted into National Academy of Engineering(NAE)**

September 2018 – **Awarded the 2018 DYMAT John Rinehart Award** by the European DYMAT Association for Dynamic Behavior of Materials

April 2018 – present: Serving on National Academy BOARD on Army Research and Development

June 2019 – **Awarded the American Physical Society -- 2019 George E. Duvall Shock Compression Science Award**

2019 – LANL Distinguished Performance Award –**“Tri-Lab Tantalum Strength Team”**

January 2020 – **Awarded-American Ceramic Society ICACC Lecture**

August 2020 – 2022: Served on Congressionally Mandated National Academy Study: “Assessing the Feasibility of the Strategic Long-Range Canon” for US Army

Selected to receive - 2023 ASM Edward DeMille Campbell Lecture Award

Dec. 2021 – **Awarded the 2021 SDSM&T Distinguished Alumni Award**

PRESENTATIONS:

(over 340 Technical Presentations since 1992 including:)

Plenary Talk – Army Sagamore Conf. on Lightweight Matls. (2010), AIAS Conf. Keynote (2013), Invited Talk – U.C. Davis (2017), Invited Lecture-TMS(2018), John Rinehart Award Lecture (2018), Duvall Award Lecture (2019), American Ceramic Society 2020 ICACC Lecture (2020)

**SOCIETIES, BOARDS,
& COMMITTEES:**

ASM International, The Minerals, Metals and Materials Society, The American Physical Society & The APS Topical Group on Shock Compression ; International Scientific Advisory Board of DYMAT

PUBLICATIONS:

Authored or Co-Authored over 485 technical publications

HOBBIES:

Stained glass, basketry, beekeeping, and woodworking