

MICHAEL R. STAKER

Education:

Ph.D., Massachusetts Institute of Technology, Materials Science and Engineering, 1975

M.S., Massachusetts Institute of Technology, Metallurgy, 1971

B.M.E., University of Dayton, Mechanical Engineering, 1970

Academic Honors:

Tau Beta Pi (The Engineering Honor Society)

University Teaching Experience:

2014-present Affiliate Associate Professor, Loyola University Maryland, Department of Engineering, Baltimore, MD

Courses taught:

Special Topics: Steel Metallurgy (EG459),
Mechanical Design (EG424),
Computer-Aided Simulation and Design (EG426),
Solid Mechanics (EG420),
Solid Mechanics Laboratory (EG320),
Thermodynamics (EG380)
Introduction to Engineering Materials (EG351),
Materials Science Laboratory (EG051),
Introduction to Engineering (EG101) and
contributions to *Technology Innovation and Entrepreneurship* (EG 491)

2008-2014 Affiliate Assistant Professor, Loyola University Maryland, Department of Engineering, Baltimore, MD

1984-1986 Adjunct Faculty Tufts University, Civil Engineering Department, Medford, MA

Courses taught: Statics, Dynamics, and Mechanics of Materials

1980 Adjunct Faculty Northeastern University, Mechanical Engineering Department, Boston, MA

Course taught: Materials Science for Engineers

Research Experience:

2008-present Affiliate Associate and Assistant Professor, Loyola University Maryland, Department of Engineering

Basic research in materials science of:

- Low Energy Nuclear Reactions with verification of energy source of manifold utility and a theory of the mechanism of and the criterion for initiation of these new types of nuclear reactions

1978-2008 Materials Research Engineer/Metallurgist/Mechanical Engineer, U.S. Army Research Laboratory (ARL), Aberdeen Proving Ground, MD (1993-2008) and ARL, Watertown, MA (1978-1993).

Basic and applied research in advanced materials on:

- tank kinetic energy ammunition: invented uranium-based, high-strength alloys called stakalloy
- adiabatic shear localization of materials for armor and munitions inducing property increases
- developed test method for radial displacements of 5.56 mm bullet components of M855 small arms ammunition illuminating cause of tumbling during flight
- uranium-based armor and steel-based armor on Abrams M1A2 main battle tank
- Low Energy Nuclear Reactions with verification of energy source of manifold utility

Additional Experience:

2008-present Patent Law Practitioner, American Patent Institute, Churchville, MD (Writing, filing, and prosecution of patents and practicing all forms of patent law before the U.S. Patent Office)

1987 Visiting Scientist, University of California, San Diego, Center of Excellence on Dynamic Performance of Materials (Research on the Dynamic Mechanical Properties governing adiabatic shear on Split-Hopkins Bar)

1975-1978 Materials Engineer, General Electric Aircraft Engine Group, Lynn MA (Failure Analyses & Design)

Professional Registrations, Licenses, Memberships and Listings:

Registered Professional Engineer, by examination, in MD, DE, MA, OH
Member of US Patent bar as a Registered Patent Agent before the U.S. Patent Office via patent bar exam
Advisory Committee on Metals Handbook by ASM International on Mechanical Testing and Chairman
International Society for Condensed Matter Nuclear Science
American Society for Testing and Materials
ASM International
Listed in American Men and Women of Science and Who's Who in Technology

Military Status and Other Interests:

Served active duty and active reserves as Air Force Officer (1972-1983)
Attained Eagle Scout at age 13
Antique car restoration and auto mechanics
Music: plays the clarinet

Selected Published Works:

- **M. R. Staker**, "Is there Science in Cold Fusion? - 25th Anniversary Invited Lecture", Engineering Club Seminar at Loyola University Maryland, Baltimore, March 21, 2014.
- **M. R. Staker**, "Stakalloy: A U-V-Nb Alloy", *U S Patent* 6,726,876, 27 April 2004.
- **M. R. Staker**, "Hypereutectoid and Hypoeutectic Binary U-V Alloys", *U S Patent* 5,963,777, 5 Oct. 1999.
- **M. R. Staker** and L.S. Magness, "Improved Depleted Uranium Alloys", *Proceedings of 8th Joint Classified Bombs/Warheads & Ballistics Symposium*, Monterey, California, 15-18 August 2005.
- R. J. Dowding, K.C. Cho, W. H. Drysdale, L. J. Kecskes, M. A. Minnicino, **M. R. Staker**, "New Materials for Large Caliber Projectiles Take Aim at Future Threats", *The Advanced Materials and Process Technology Information Analysis Center Quarterly*, Vol.8, No.4, pp. 71-78 (2004).
- **M. R. Staker**, "U-V Equilibrium Phase Diagram," *J. Alloys Comp.* 266 (1998) 167.
- C. S. Choi and **M. R. Staker**, "Neutron Diffraction Texture Study of Deformed Uranium Plates," *J. Mat. Sci.* 31 (1996) 3397.
- **M. R. Staker**, "The Effect of Strength of Martensitic Steel Armor on Penetration of Long Rods", *ARL-TR-139, Army Research. Lab. Tech. Report*, May (1993).
- **M. R. Staker** and N. J. Grant, "The Effects of Strain, Strain Rate and Temperature on Grain Refinement and Hot Workability of Type 305 Stainless Steel", *Mat. Sci. and Engr.*, 75 (1985) 137.
- **M. R. Staker**, "High Strain Rate Testing," Chapter in *Mechanical Testing*, vol. 8, *Metals Handbook*, (9th ed.), ASM (1985) 187.
- **M. R. Staker**, "Relation between Adiabatic Shear Instability Strain and Material Properties," *Acta Met.*, 29 (1981) 683 and 32 (1984) 987.
- **M. R. Staker**, "The Influence of Dynamic strain Aging on the Temperature Dependence of Flow Stress and the Impact of This on Adiabatic Shear Analysis", *Scripta Met.* 18 (1984) 735.
- S. L. Semiatin, **M. R. Staker**, and J. J. Jonas, "Plastic Instability and Flow Localization in Shear at High Rates," *Acta Met.* 32 (1984) 1347.
- **M. R. Staker**, "On Adiabatic Shear Determinations by Surface Observations," *Scripta Met.* 14 (1980) 677.
- **M. R. Staker** and D. L. Holt, "The Dislocation Cell Size and Dislocation Density in Copper Deformed at Temperatures between 25 and 700 °C", *Acta Met.*, 20 (1972) 569.
- **M. R. Staker** 36 Company Reports on "Failure Analysis of Aircraft Engine Components and Material Properties of New Superalloys", GE Aircraft Engine Group, Lynn, MA (1975-1978).