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 (International Engineering Honor Society)

University Teaching Experience:

2008-present Affiliate Faculty, Loyola University Maryland, Engineering Department, Baltimore, MD

Courses taught: Introduction to Engineering Materials (EG351), Materials Science Laboratory (EG051), Solid Mechanics (EG420), Solid Mechanics Laboratory (EG320), Mechanical Design (EG424), Special Topics: Steel Metallurgy (EG459) and Introduction to Engineering (EG101)

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:

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

Basic and applied research in advanced materials:

- tank kinetic energy ammunition; invented uranium-based, high-strength alloys called stakalloy
- adiabatic shear localization of ballistic performance from uranium alloys with 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 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

1987 Visiting Scientist, University of California, San Diego in Center of Excellence for Dynamic Performance of Materials

1975-1978 Materials Engineer, General Electric Aircraft Engine Group, Lynn MA

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
International Society for Condensed Matter Nuclear Science
ASM International
American Society for Testing and Materials
Advisory Committee on Metals Handbook by ASM International on Mechanical Testing and Chairman
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 (1972-1985)
attained Eagle Scout
auto mechanics and antique car restoration
play clarinet

Selected Published Works:

- **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 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 ^{o}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).