

MATTHEW J. O'KEEFE

Associate Professor, Department of Materials Science and Engineering
and Graduate Center for Materials Research
University of Missouri - Rolla
Rolla, MO 65409-0330
(573) 341-6764; FAX (573) 341-2071; mjokeefe@umr.edu

EDUCATION

- Ph.D. University of Illinois (Metallurgical Engineering), 1993
- B.S. University of Missouri - Rolla (Metallurgical Engineering), 1985

PROFESSIONAL EXPERIENCE

- 1999- Assoc. Professor, Metallurgical Engineering, University of Missouri-Rolla
- 1993- 1999 Adjunct Professor, University of Dayton (Graduate Materials), Dayton, OH
- 1990- 1999 Materials Research Engineer, Air Force Research Laboratory, WPAFB, OH
- 1988- 1990 Member of the Technical Staff, AT&T Bell Laboratories, Allentown, PA
- 1985- 1988 Planning Engineer, AT&T Microelectronics, Lee's Summit, MO

RESEARCH INTERESTS

- Deposition and Characterization of Thin Films and Coatings
- MEMS, Microelectronics, Nanomaterials
- Electron Microscopy and Surface Analysis
- Environmentally Benign Materials and Processing

HONORS/AWARDS/PATENTS

- UMR Outstanding Teaching Award (2003-2004)
- UMR Faculty Excellence Awards (2002, 2003, 2004)
- University of Missouri Faculty Performance Shares Award (2001)
- School of Mines and Metallurgy Sustained Excellence in Teaching Award (2002-2003)
- Professor of the Year (Metallurgical Engineering) – 2003, 2004
- Outstanding Paper Award in Coatings Technologies, International Waterborne, High-Solids, and Powder Coatings Symposium, Feb 2002.
- Best U.S. Technical Paper , APEX 2003 Conference and Exhibition, Mar 2003.
- "Transparent Crystalline Chromium/Carbon/Fluorine Films", Matthew J. O'Keefe and J. Michael Riggsbee, Patent # 5,628,882, issue date 13 May 97.
- "Process for Spontaneous Deposition from an Organic Solution", Thomas J. O'Keefe and Matthew J. O'Keefe, patent application filed March 12, 2004.
- "Ce-Based Spontaneous Coating Process For Corrosion Protection of Al Alloys", James O. Stoffer, Thomas J. O'Keefe, Matthew O'Keefe, Eric L. Morris, Scott Hayes, Alex Williams, Berny Rivera, Xuan Lin, patent application filed August 8, 2002.

SELECTED PUBLICATIONS

- E. Dahlgren, J. Sun, T. J. O'Keefe and M. J. O'Keefe, "Spontaneous Electrochemical Deposition of Gold Coatings from Organic Solutions", *Plating and Surface Finishing*, **92**(1), 36 (2005).
- B. Johnson, J. Edington, A. Williams, and M. O'Keefe, "Microstructural Characteristics of Cerium-Based Conversion Coatings Obtained by Various Deposition Methods." *Materials Characterization* **54**, 41 (2005).

- J. P. Chu, C. T. Liu, T. Mahalingam, S. F. Wang, M. J. O'Keefe, B. Johnson, and C. H. Kuo, "Annealing-Induced Solid-State Amorphization in a Metallic Film", *Phys. Rev. B.* **69**, 113410 (2004).
- Benedict Y. Johnson, Joe Edington, and Matthew J. O'Keefe, "Effect of Coating Parameters on the Microstructure of Cerium Oxide Conversion Coatings", *Materials Science and Engineering A*, **361**, 225 (2003).
- Berny F. Rivera, Benedict Y. Johnson, Matthew J. O'Keefe, and William G. Fahrenholtz, "Deposition and Characterization of Cerium Oxide Conversion Coatings on Aluminum Alloys 7075-T6", *Surface and Coatings Technology*, **176**(3), 349 (2003).
- R. Fang, H. Gu, M. J. O'Keefe, T. J. O'Keefe, W.-S. Shih, K. D. Leedy and R. Cortez, "Spontaneous, Non-Aqueous Electrochemical Deposition of Copper and Palladium on Al and Al(Cu) Thin Films" *J. of Electronic Materials*, **30**(4), 349 (2001).
- K. D. Leedy, M. J. O'Keefe, E. J. Dahlgren, and J. T. Grant, "Properties of Sputtered Bilayer W_{N_x}/W Diffusion Barriers between Si and Cu", in Mechanisms of Surface and Microstructure Evolution in Deposited Films and Film Structures, Mat. Res. Soc. Proc. **714E**, L4.6.1 (2002).
- R. Fang, H. Gu, T. J. O'Keefe, M. J. O'Keefe, W.-S. Shih, K. D. Leedy, and R. Cortez, "An Alternative Metallic Seeding Technique for Subsequent Electrochemical Deposition of Copper onto Barrier Films", in Advanced Metallization Conference 2000, Materials Research Society, Warrendale, PA (2001).
- H. Gu, R. Fang, T. J. O'Keefe, M. J. O'Keefe, W.-S. Shih, J. A. M. Snook, K. D. Leedy and R. Cortez, "Organic Solution Deposition of Copper Seed Layers onto Barrier Metals", in Materials, Technology and Reliability for Advanced Interconnects and Low-k Dielectrics, Mat. Res. Soc. Proc. **612**, D9.19 (2001).
- K. D. Leedy, M. J. O'Keefe, J. G. Wilson, R. Osterday, and J. T. Grant, "Stress, Microstructure and Temperature Stability of Reactive Sputter Deposited W(N) Thin Films", in Materials, Technology and Reliability for Advanced Interconnects and Low-k Dielectrics, Mat. Res. Soc. Proc. **612**, D9.20 (2001).
- R.E. Strawser, R. Cortez, M.J. O'Keefe, K.D. Leedy, J.L. Ebel, and H.T. Henderson, "Film Stress Influence of Bilayer Metallization on the Structure of RF MEMS Switches", in Thin Film Stresses and Mechanical Properties VIII, Mat. Res. Soc. Proc. **594**, 213 (2000).
- M. J. O'Keefe and J. M. Rigsbee, "Reactive Sputter Deposition of Crystalline Cr/C/F Thin Films", *Materials Letters* **18**, 251 (1994).

PROFESSIONAL SERVICE (PARTIAL LIST)

- Reviewer for 5 journals including J. of Mat. Sci. and Eng A, J. of Mat. Res, and J. of Phase Equilibria
- Member - TMS, ASM, MRS, Tau Beta Pi, Alpha Sigma Mu, NACE