PATRICK J. MORAN

EDUCATION

Ph.D., Materials Science, School of Engineering & Applied Science, University of Virginia, 1980
M.S., Materials Science, School of Engineering & Applied Science, University of Virginia, 1977
B.S., Materials Engineering, Wilkes College (now Wilkes University), Wilkes-Barre, PA, 1975

PROFESSIONAL EXPERIENCE

Naval Surface Warfare Center, Bethesda, MD - Visiting Research Scientist (while on sabbatical). Participating in various corrosion research and engineering programs in the Corrosion Branch at NSWC-Carderock Division. Teaching a comprehensive course in corrosion and electrochemistry to several recently hired engineers.

U.S. Naval Academy, Annapolis, MD - Professor, Mechanical Engineering Department.
Director, Materials Engineering Laboratories, Mechanical Engr. Dept. (1990 to 1998)
Teaching courses in materials science and engineering, engineering thermodynamics, and corrosion engineering. Conducting research in various areas of electrochemistry and marine corrosion of interest to the U.S. Navy. Current research programs include development of sensors for detecting crevice corrosion, mechanisms of pitting corrosion in aluminum alloys, corrosion resistant coatings for propellers, electrochemical methods for measuring corrosion, and failure mechanisms in fire sprinkler systems.

U.S. Naval Academy, Annapolis, MD - Chair and Professor, Mechanical Engineering Department.
Department consists of 39 faculty members, approximately 200 undergraduates majoring in an ABET accredited mechanical engineering program. Department teaches statics, dynamics, strength of materials, engineering thermodynamics, and fluid dynamics for all six of the ABET accredited engineering majors at USNA. Department is one of the most research active at USNA at participates in several national competitions including SAE Formular Car, FIRST Robotics, and Solar Splash. Served as Co-Vice Chairperson for the 1995 Institutional Self Study at USNA which resulted in full accreditation for the academic programs by the Commission of Higher Education.

U.S. Navy - ASEE Senior Summer Faculty Fellow, David Taylor Research Center, Annapolis, MD
Worked in the Marine Corrosion Branch on crevice corrosion of Alloy 625 in seawater as well as on other corrosion programs.

Johns Hopkins University, Baltimore, MD Faculty Member, Dept. of Materials Science & Engr., Taught variety of courses in materials science and engineering, corrosion, and electron microscopy at both the graduate and undergraduate level. Developed and managed an active research program in corrosion and electrochemistry with particular emphasis on the influence of

electrode microstructure on electrochemical properties and on the electrochemical characterization of corrosion processes. Program averaged $300K funding per year and 5 graduate students per year. Advised 17 Masters and 9 Ph.D. Degrees. Four of the Ph.D.=s currently hold tenured faculty positions in the United States.

US Navy David Taylor Research Center, Annapolis, MD - Metallurgist. Participated in several programs with the Marine Corrosion Branch dealing with corrosion control, corrosion measurement, and failure analysis. (part time employment)

HONORS, AWARDS AND PRESTIGIOUS INVITATIONS

Elected Fellow, The Electrochemical Society, Inc. "in recognition of his numerous contributions to the field of electrochemistry, especially in the area of solid-state batteries, corrosion in organic and mixed organic/aqueous electrolytes, and hydrogen entry into metals; for his pioneering research in the detection and measurement of corrosion processes; for his dedication to education; and his distinguished services to ECS" in September 2001

Elected as and served as the Chairman of the 2002 Gordon Conference on Aqueous Corrosion

Elected Chair of the Chairs, U.S. Naval Academy, 1999-2000

Recipient of The Jerome Kruger Award for Corrosion Science of the Baltimore/Washington Section of NACE International for "his many contributions to the fundamental understanding of the science of corrosion through his dedication to the local, national, and international corrosion community" (1999)

Meritorious Civilian Service Medal, U.S. Department of the Navy, in recognition of meritorious service which has been of high value and benefit to the Navy, May 20, 1996

Elected Fellow, NACE International, "for advancing corrosion science and engineering through research on corrosion mechanisms, development of new measurement techniques, and the education of corrosion scientists and engineers", March 1996

Recipient of the Robert T. Foley Award of the National Capital Section of the Electrochemical Society, Inc. for "his profound dedication to the education of students and his numerous contributions to the Society and to the fields of electrochemistry" (1995)

Certified Corrosion Specialist, NACE International, (#4966), (1994)

Outstanding Research Award, Mech. Engr. Dept., U.S. Naval Academy (1994, 1995, and 1996)

Elected Fellow, Institute of Corrosion, UK (1993)

Outstanding Teaching Award, Mech. Engr. Dept., U.S. Naval Academy (1993)

Appointed to Board of Editors for CORROSION (1992)

1989 Member of the Year Award, Baltimore/Washington Section of NACE International "for dedication to the education and support of students, his contributions to the local and national NACE organizations, and his technical contributions to the fields of non aqueous corrosion, stress corrosion cracking, crevice corrosion, and underground corrosion detection"

Elected as the Society President for Alpha Sigma Mu, the International Honor Society for Materials Science and Engineering (1989)

Invited Presentation at the 1988 Gordon Research Conference on Aqueous Corrosion

Invited Participant, NSF Sponsored Joint French/U.S. Workshop on Ocean Engineering and Marine Corrosion, Paris (1988)

Visiting Professor, Department of Chemistry, University of Tel Aviv, Israel (January 1988)

Recipient of 17th William Blum Award of the National Capital Section of the Electrochemical Society, Inc. for "his contributions to corrosion science, particularly on advancing the understanding of hydrogen solubility in metals and in the development of methods to locate and measure corrosion on underground pipelines" (1988)

Elected to Membership in Sigma Xi, The Scientific Research Society, Johns Hopkins University Chapter (1988)

Appointed Corrosion Division Editor for the JOURNAL OF THE ELECTROCHEMICAL SOCIETY (1987)

Appointed to Review Board of MATERIALS PERFORMANCE (1987)

Recipient, Melvin Romanoff Award, NACE for best paper published in a calendar year in CORROSION or MATERIALS PERFORMANCE (1985), (with Barbara Shaw)

Recipient, Severn Technical Society Paper of the Year Award (1985), (with Barbara Shaw)

PROFESSIONAL SOCIETY ACTIVITIES

ALPHA SIGMA MU (International Honor Society for Materials Science & Engr.)
Society President (1989-90)
Other Offices (1987-89)

ELECTROCHEMICAL SOCIETY, INC.
Member, Board of Directors (1998 to 2000)
Corrosion Division
Immediate Past Chairman (2000 to 2002)
Chairman (1998 to 2000)
Vice-Chairman (1996-1998)
Sec/Treas (1994-1996)
Member of Executive Committee (1988 to present)
Journal of the Electrochemical Society, Division Editor (1987-1990)
Chairman, Corrosion Symposium/General Session
National Meetings, May 1997, October 1997, October 1998
Symposium Chairman, Corrosion in Battery and Fuel Cell Systems
National Meetings, Oct. 1993 and Oct. 1989
Symposium Chairman, Corrosion and Corrosion Prevention of Light Metals and Alloys,
National Meeting, Oct. 1985
Symposium Chairman, Corrosion Sensors
National Meeting, Oct 1998, March 2001
Education Committee
Chairman (1987-1990)
Member (1986-1990)
Honors and Awards Committee
Member (1989 to 1997, 2 terms)
Chairman, External Awards Subcommittee (1989-1993)
Chairman, 1995 Olin Palladium Award Subcommittee
Chairman, Honorary Members Subcommittee (1995 to 1997)
Member, various award subcommittees (1989 to 1997)
Publication Committee
Member (1998 to 2001)
Chairman, Blum Award Comm., National Capital Sect. (1990 91, 93-94, Member 95-96)
Chairman, Nominating Committee, National Capital Sect. (1993-96)
Chairman, Foley Award Comm., National Capital Sect. (2000-2001)

MARYLAND INSTITUTE OF METALS
President 1984 85
Other offices 1981 84

NATIONAL ASSOCIATION OF CORROSION ENGINEERS
Chairman, Cathodic Protection Symposium, CORROSION '85
Member of Research Committee (1987-1995, 2 terms)
MATERIALS PERFORMANCE Review Board (1987-1992)
Chairman, Balto.-Wash. Section (1991-92)
Other Offices (1985-1991)
Member of Board of Editors, CORROSION (1992-1996)

GORDON CONFERENCE ON AQUEOUS CORROSION
Elected as Conference Vice-Chairman for 2000 (absent from conference due to family medical emergency)
Served as Chairman for 2002

BOOKS AND PATENTS

1. Effects of Acid Deposition on Materials, State of Science and Technology Report #19 for the National Acid Precipitation Assessment Program, P.A.Baedecker, E.O.Edney, P.J.Moran, T.C. Simpson, and R.S.Williams, 280 pages, Government Printing Office, Washington, DC, 1990

2. Non-Invasive, High Resolution Detection of Electrical Currents and Electrochemical Impedances at Spaced Localities Along a Pipeline, U.S. Patent 5,087,873, with J.C. Murphy, G.S. Hartong, and R.F. Cohn, Feb. 11, 1992

3. Magnetic Measurement of the Electrochemical Currents for the Detection and Quantification of Localized Corrosion Processes (with E.J.Taylor and M.Sunkara), U.S. Patent Pending

PUBLICATIONS

1. Energy Losses Occurring in Alkaline Electrolyzers, P.J.Moran and G.E.Stoner, Proc. Symposium on Industrial Water Electrolysis, Eds. S.Srinivasan, F.J.Salzano and A.R.Landgrebe, Electrochem. Soc. Proc. Vol. 78 4, p.169, May 1978

2. Investigation of Nickel Whisker Networks as Electrodes for Hydrogen and Oxygen Evolution,G.L.Cahen, P.J.Moran, L.L.Scribner & G.E.Stoner, Journal of the Electrochem. Soc., Vol.128, No.9, pp.1877 1880, Sept. 1981

3. Microstructure Development in Thick Film Resistors, D.L.Hankey, J.A.Goldman, and P.J.Moran, Proc. of Annual Meeting of Internat. Soc. of Hybrid Microelectronics, Nov. 1983

4. Implantation of Ionized Monomer into Aluminum Alloy 6061 for Marine Corrosion Protection, S.R.Taylor, G.L.Cahen,Jr., G.E.Stoner, P.J.Moran and M.W.Ferralli, David Taylor Research Center Publication DTNSRDC-84-046, Annapolis, MD, 1983

5. Thick Film Interface Research, D.L.Hankey, J.A.Goldman, and P.J.Moran, Solid State Technology, Vol.27, No.9, pp.268 273, Sept. 1984

6. Scanning Electron Microscopy Techniques for Thick Film Microstructural Characterization, D.L. Hankey, K.R.Bube, and P.J.Moran, Advances in Ceramics Vol.11: Processing for Improved Productivity, Ed. K.M.Nair, pp.117-130, The American Ceramic Society, 1984

7. Effect of Reinforcement on the Pitting Behavior of Aluminum Base Metal Matrix Composites, D.M.Aylor and P.J.Moran, in Equilibrium Diagrams: Localized Corrosion, Proc. Internat. Symp. Honoring Professor Marcel Pourbaix on his 80th Birthday, Edited by R.P.Frankenthal and J.Kruger, Electrochem. Soc. Proc. Vol.84 9, p.584, October 1984

8. Ionized Monomer Implantation into Aluminum A Seawater Immersion Study, S.R.Taylor, G.L. Cahen, G.E.Stoner, P.J.Moran, and M.W.Ferralli, in Fundamental Aspects of Corrosion Protec., Eds. E.McCafferty, C.R.Clayton and J.Ondar, Electrochem. Soc. Proc. Vol.84 3, p.62, 1984

9. Wide Angle Electron Channeling Pattern Imaging of Insonated Alum., K.R.Breen and P.J.Moran Proc.19th Annual Conf. of the Microbeam Analysis Soc., Bethlehem, PA, pp.309-311, 1984

10. Time Dependent Energy Efficiency Losses at Nickel Cathodes in Alkaline Water Electrolysis Systems, H.E.G.Rommal and P.J.Moran, J. Electrochem. Soc., Vol.132, No.2, pp.325 329, 1985

11. The Effects of Chlorinated Seawater on the Corrosion of Alloys Used in Seawater Piping Systems, R.J.Ferrara, L.E.Taschenberg, and P.J.Moran, CORROSION `85 Paper No. 211, National Assoc. of Corrosion Engineers, Houston, TX, 1985

12. Characterization of the Corrosion Behavior of Zinc Aluminum Thermal Spray Coatings, B.A. Shaw and P.J.Moran, CORROSION '85 Paper No. 212, NACE, Houston, TX, 1985

13. A Comparison of Electrochemical Techniques for Assessing the Pitting Behavior of Aluminum Alloys in Seawater, D.M.Aylor and P.J.Moran, CORROSION '85 Paper No. 216, NACE, Houston, TX, 1985

14. Effect of Reinforcement on the Pitting Behavior of Aluminum Based Metal Matrix Composites, D.M. Aylor and P.J.Moran, J. Electrochem. Soc., Vol.132, No.6, pp.1277 1281, June 1985

15. The Active State in Sprayed Metal Coatings: A Discussion, B.A.Shaw and P.J.Moran, The Surfacing Journal, Vol.16, No.3, pp.66 69, Nov. 1985

16. Characterization of the Corrosion Behavior of Zinc Aluminum Thermal Spray Coatings, B.A.Shaw and P.J.Moran, Materials Performance, Vol.24, No.10, pp.22 31, Nov. 1985

17. The Effects of Chlorinated Seawater on the Corrosion of Alloys used in Seawater Piping Systems, R.J.Ferrara, L.E.Taschenberg and P.J.Moran, David Taylor Research Center Report # SME 84-135, Annapolis, MD, 1985

18. Characterization of the Corrosion Behavior of Zinc-Aluminum Thermal Spray Coatings, B.A. Shaw and P.J.Moran, David Taylor Research Center Report # SME 84-107, Annap., MD, 1985

19. An Investigation of the Volume Change Associated with Discharge of Lithium/Iodine Batteries via Holographic Interferometric Techniques, L.C.Phillips, R.G.Kelly, J.W.Wagner, and P.J.Moran, Journal of the Electrochem. Soc., Vol.133, No.1, pp.1 5, Jan. 1986

20. Electrochemical Measurement of Corrosion Rates in Media of Low Conductivity, J.R.Scully, P.J.Moran, E.Gileadi, Journal of the Electrochem. Soc., Vol.133, No.3, pp. 579 581, March 1986

21. Crystallization, Embrittlement, and Fracture Morphology of Annealed Fe(81) B(13.5) Si(3.5) C(2), A.M.Leimkuhler, P.J.Moran, R.B.Pond, and R.E.Green, Journal of Materials Science, Vol.21, pp.936 940, March 1986

22. Structural Homogeneity, Crystallization, and Embrittlement Behavior of Fe(81) B(13.5) Si(3.5) C(2), A.M.Leimkuhler, R.B.Pond, R.E.Green, and P.J.Moran, J. Noncrystalline Solids, Vol.18, No.1, pp.141 146, April 1986

23. Electron Channeling Contrast Imaging of Crystalline Deformation Due to High Power Ultra-sound, K.R.Breen and P.J.Moran, Materials Science and Engr., Vol.79, No.1, pp.37 41, 1986

24. The Influence of Iron Deposition on the Voltage Time Behavior of Nickel Cathodes in Alkaline Water Electrolysis, M.A.Riley and P.J.Moran, J. Electrochem. Soc., Vol.133, No.4, pp.760 761, April 1986

25. An Investigation of Corrosion Properties and Protection for Graphite/Aluminum and Silicon Carbide/Aluminum Metal Matrix Composites, D.M.Aylor and P.J.Moran, CORROSION '86 Paper No. 202, NACE, Houston, TX, 1986

26. Application of Electrochemical Techniques to the Study of Hydrogen Embrittlement Phenomena, J.R.Scully and P.J.Moran, CORROSION '86 Paper No. 264, NACE, Houston, TX, 1986

27. Electrochemical Techniques for the Study of Underground Corrosion, J.N.Murray, J.R.Scully, and P.J.Moran, CORROSION '86 Paper No. 271, NACE, Houston, TX, 1986

28. Plants, Paints, and Pottery: Identification of Madder Pigment on Cypriot Ceramicware, G.V. Foster and P.J.Moran, Proc. 1986 International Symposium on Archaeometry, May 1986

29. The Influence of Incubation Time on the Passive Film Breakdown of Aluminum Alloys in Seawater, D.M.Aylor and P.J.Moran, J. Electrochem. Soc., Vol.133, No.5, pp.868 872, May 1986

30. Modeling of Reduced Bandwidth Distortion to Wide Area Electron Channeling Mapping resulting from Ultrasonic Deformation, K.R.Breen and P.J.Moran, Materials Science and Engineering, Vol.82, pp.117 126, 1986

31. Measurement of Electrolytic Conductivity in Highly Conductive Solutions, R.J.Guanti and P.J. Moran, Journal of Applied Electrochemistry, Vol.16, pp.678 682, 1986

32. Pitting Corrosion Behavior of 6061 Aluminum Alloy Foils in Seawater, D.M.Aylor and P.J. Moran, Journal of the Electrochem. Soc., Vol.133, No.5, pp.949 951, May 1986

33. Auxiliary Electrode Method for Determination of Ohmic Resistance, P.J.Moran, Corrosion, Vol.42, No.7, pp.432 434, July 1986

34. Evaluation of Environment Assisted Cracking of High Strength Steels Using Elastic Plastic Fracture Mechanics Techniques, E.M.Hackett, P.J.Moran, and J.P.Gudas, ASTM Special Technical Publication #905, Fracture Mechanics: Seventeenth Volume, p.512, 1986

35. The Rate Limiting Mechanism in Li/I2 (P2VP) Batteries Part I. Effect of Discharge Rate on the Morphology and Dimensions of the Cell Components, R.G.Kelly and P.J.Moran, Journal of the Electrochem. Soc., Vol.134, No.1, pp.25 30, 1987

36. The Rate Limiting Mechanism in Li/I2 (P2VP) Batteries Part II. Effect of Discharge Rate on the Contributions of the Cell Components to the Cell Impedance, R.G.Kelly and P.J.Moran, Journal of the Electrochem. Soc., Vol.134, No.1, pp.31 37, 1987

37. Review of Corrosion Resistance Tables 2nd Edition, P.J. Moran, Materials Science and Engr., Vol. 96, p.332, Dec. 1987

38. Corrosion Performance of Aluminum & Zinc Aluminum Thermal Spray Coatings in Marine Environments, B.A.Shaw, A.M.Leimkuhler, and P.J.Moran, ASTM Special Technical Public. 947, Testing of Metallic and Inorganic Coatings, Eds. W.B.Harding & G.A. DiBari, pp.246 264, 1987

39. The Hydrogen Embrittlement Susceptibility of Ferrous Alloys: The Influence of Strain on Hydrogen Entry and Transport, J.R.Scully and P.J.Moran, ASTM Special Technical Publication #962 Hydrogen Embrittlement: Prevention & Control, pp.387 402, 1988

40. Magnetic Field Measurement of Corrosion Processes, J.C.Murphy, G.Hartong, R.F.Cohn, P.J. Moran, K. Bundy, and J.R. Scully, J. Electrochem. Soc., Vol.135, No.2, pp.310 313, Feb. 1988

41. The Role of Absorbed Hydrogen on the Voltage Time Behavior of Nickel Cathodes in Hydrogen Evolution, H.E.G.Rommal and P.J.Moran, J. Electrochem. Soc., Vol.135, No.2, pp.343 346, 1988

42. Influence of Strain on the Environmental Hydrogen Assisted Cracking of a High Strength Steel in Sodium Chloride Solution, J.R.Scully and P.J.Moran, Corrosion Vol.44, No.3, pp.176 185,1988

43. Ion Beam Assisted Deposition of Thin Carbonaceous Films I. Seawater Immersion Performance, S.R.Taylor, G.L. Cahen, Jr., G.E.Stoner, M.W.Ferralli, and P.J.Moran, Journal of the Electrochem. Soc., Vol.135, No.4, pp.809 817, April 1988

44. Steel Corrosion Rate Studies Using Sample Area as a Variable, J.N.Murray and P.J.Moran, Journal of the Electrochem. Soc., Vol.135, No.6, pp.1333 1337, 1988

45. Influence of Strain on Hydrogen Entry & Transport in High Strength Steel in Sodium Chloride Solution, J.R.Scully and P.J.Moran, J. Electrochem. Soc., Vol.135, No.6, pp.1337 1348, 1988

46. Utilization of the Specific Pseudocapacitance for the Determination of the Area of Corroding Steel Surfaces, J.N.Murray, P.J.Moran and E.Gileadi, Corrosion, Vol. 44, No.8, pp.533 538, 1988

47. The Influence of Moisture on Corrosion of Pipeline Steel in Soils Using In Situ Impedance Spectroscopy, J.N.Murray and P.J.Moran, Corrosion, Vol.45, No.1, pp. 34 43, January 1989

48. The Effect of Mechanical Strain on the Rate of Hydrogen Evolution, N.Tchernikovsky, P.J.Moran and E.Gileadi, Journal of the Electrochem. Soc., Vol.136, No.4, pp. 1089 1095, April 1989

49. Response to Discussion of Paper #32 (see above), J.R. Scully and P.J.Moran, Corrosion, Vol.45, No.4, pp. 316 319, April 1989

50. The Passivity of Iron in Mixtures of Propylene Carbonate and Water, R.G.Kelly, P.J.Moran, E. Gileadi and J.Kruger, Electrochem. Acta, Vol.34, No.6, pp.823 830, June 1989

51. The Use of Pseudocapacitance for Estimating the Corroding Surface Area on Underground Steel Structures, S.G.Ehrlich and P.J.Moran, Corrosion, Vol. 45, No.8, pp.689 696, August 1989

52. Response to Discussion of Paper #36 (see above), J.N.Murray, P.J.Moran, and E.Gileadi, Corrosion, Vol.45, No.9, pp.725 727, September 1989

53. An Electrochemical Monitor for the Detection of Coating Degradation in Atmosphere, T.C. Simpson, P.J.Moran, W.C.Moshier, G.D.Davis, B.A.Shaw, C.O.Arah, and K.L. Zankel, Journal of Electrochem. Soc., Vol.136, No.9, pp.2761 2762, September 1989

54. The Influence of Poly(2 vinylpyridine) Molecular Weight on the Volume Change Characteristics of Li/Iodine Batteries with Pelletized Cathodes, C.C.Streinz, J.S.Steckenrider, J.W.Wagner and P.J.Moran, Journal of Electrochem. Soc., Vol.136, No.10, pp.2811 2816, 1989

55. Alleviating the Common Confusion Caused by Polarity in Electrochemistry, P.J.Moran and E.Gileadi, Journal of Chemical Education, Vol.66, No.11, pp.912 916, Nov. 1989

56. The Passivity of Iron in Anhydrous Propylene Carbonate, R.G.Kelly, P.J.Moran, C.Zollman, E.Gileadi, and J.Kruger, Journal of the Electrochem. Soc., Vol.136. No.11, pp.3262 3269, 1989

57. An EIS Study of the Corrosion Behavior of Polyethylene Coating Holidays in Natural Soil Conditions, J.N.Murray and P.J.Moran, Corrosion, Vol.45, No.11, pp.885 895, November 1989

58. Measurement of the Components of the Ohmic Resistance in Lithium/Iodine (P2VP) Batteries, C.C.Streinz, R.G.Kelly, P.J.Moran, J.Jolson, J.R.Waggoner and S.Wicelenski, ASTM Special Technical Publication #1056 Measurement and Compensation of Electrolyte Resistance in Electrochemical Tests, pp.202 210, 1989

59. Influence of Electrolyte Resistance on Electrochemical Measurements and Minimization/ Correction Procedures, H.P.Hack, P.J.Moran and J.R.Scully, ASTM Special Technical Publication #1056 Measurement and Compensation of Electrolyte Resistance in Electrochemical Tests, pp.202 210, 1989

60. The Effect of P2VP Molecular Weight and Aging Temperature on Self Discharge and the Subsequent High Rate Performance of Lithium Iodine Batteries, C.C.Streinz, R.G.Kelly, P.J. Moran, & J.R.Waggoner, The Electrochem. Soc. Proc. Vol. 88 6, Symp. on Primary and Secondary Ambient Temperature Lithium Batteries, Eds. J.P. Gabano, P.Bro, & Z.Takehoua, pp.87 105, 1989

61. The Influence of Poly (2 vinylpyridine) Molecular Weight on the Volume Change Characteristics of Li/I2 Batteries with Pelletized Cathodes, C.C.Streinz, R.G.Kelly, J.S.Steckenrider, J.W.Wagner, and P.J.Moran, Electrochem. Soc. Proc. Vol.88 6, Symp. on Primary and Secondary Ambient Temperature Lithium Batteries, Eds. J.P. Gabano, P.Bro, & Z.Takehoua, pp.106 128, 1989

62. Influence of Strain on Hydrogen Assisted Cracking of Cathodically Polarized High-Strength Steel, J.R.Scully and P.J.Moran, ASTM Special Technical Publication #1049 Environmentally Assisted Cracking: Science and Engineering, pp.5-29, 1990

63. Electrochemical Impedance Measurements for Evaluating and Predicting the Performance of Organic Coatings for Atmospheric Exposure, T.C.Simpson, P.J.Moran, H.Hampel, G.D.Davis, B.A.Shaw, C.O.Arah, and K.Zankel, ASTM Special Publication #1000 Corrosion Testing and Evaluation: Silver Anniversary Volume, pp.397-412, 1990

64. The Passivity of Metals in Organic Solutions, R.G.Kelly and P.J.Moran, Corrosion Science, Vol.30, No.4/5, pp. 495-509, 1990

65. Effects of SO2 Deposition on Painted Steel Surfaces, G.D.Davis, B.A.Shaw, C.O.Arah, T.L.Fritz, W.C. Moshier, T.C.Simpson, P.J.Moran, & K.L.Zankel, Surface and Interface Analysis, Vol.15, pp.107-113, 1990

66. Electrochemical Monitoring of Organic Coating Degradation During Atmospheric or Vapor Phase Exposure, T.C.Simpson, P.J.Moran, H.Hampel, G.D.Davis, B.A.Shaw, C.O.Arah, T.L.Fritz, and K.Zankel, Corrosion, Vol.46, No.4, pp.331-336, 1990

67. The Influence of P2VP Incorporation into LiI on the Rate Capabilities of Lithium Iodine (P2VP) Batteries, C.C.Streinz and P.J.Moran, J. Electrochem. Soc., Vol.137, No.8, pp.2379-2385, 1990

68. Role of Ohmic Potential Drop in the Initiation of Crevice Corrosion on Alloy 625 in Seawater, B.A.Shaw, P.J.Moran and P.O.Gartland, Corrosion Science, Vol.32, No.7, pp.707-719, 1991

69. The Passivity of Iron and Carbon Steel in Anhydrous Propylene Carbonate Solutions, D.A. Shifler, P.J.Moran, and J.Kruger, Corrosion Science, Vol.32, No.5/6, pp. 475-496, 1991

70. The Passivity of Iron in Anhydrous Dimethoxyethane and the Observance of Passivation by Electropolymerization, J.F.Scanlon, P.J.Moran, and J.Kruger, The Electrochem. Soc. Proc. Vol.92-9, Critical Factors in Localized Corrosion, Eds. G.S.Frankel and R.C.Newman, pp.525-537, Electrochem. Soc., 1991

71. Projection of Improved High Rate Discharge Performance of Homogenized Cathode Lithium Iodine (P2VP) Batteries, C.C.Streinz, J.Scala, J.W.Wagner, and P.J.Moran, J. of Applied Electrochem., Vol.22, pp.99-103, 1992

72. The Passivity of 304 Stainless Steel in Propylene Carbonate Solutions, D.A.Shifler, P.J.Moran, and J. Kruger, J. Electrochem. Soc., Vol.139, No.1, pp.54-60, 1992

73. Analysis of Passive Film Growth by Dynamic Imaging Microellipsometry, C.C.Streinz, J.W. Wagner, J.Kruger and P.J.Moran, J. Electrochem. Soc., Vol.139, No.3, pp. 711-715, 1992

74. Method for Determining the AC Current Distribution at an Electrochemical Interface and Generating Local Impedance Data, R.S.Lillard, P.J.Moran and H.S.Isaacs, J. Electrochem. Soc., Vol.139, No.4, pp.1007-1012, 1992

75. Evaluation of the Effects of Acidic Pollutants on Coated Steel Substrates, T.C.Simpson, P.J. Moran, H.Hampel, G.D.Davis, B.A.Shaw, C.O.Arah, T.L.Fritz, and K.L.Zankel, Progress in Organic Coatings, Vol.20, No.2, pp.183-200, 1992

76. Effect of Microstructure on Passive Film Formation and Breakdown on Al-Ta Alloys, J.Kruger, R.S.Lillard, C.C.Streinz, and P.J.Moran, Faraday Discussions - The Liquid/Solid Interface at High Resolution, No.94, pp.127-136, 1992

77. Preliminary Evaluation of Selected Corrosion Resistant Fastener Coatings for Shipboard Combat Systems, P.J.Moran, W.S.Laird, and J.J.DeBellis, US Naval Academy Report USNA-EW-01-92, Annapolis, MD, 1992

78. Evaluation of As Received Corrosion Resistant Coatings on Fasteners for Shipboard Topside Combat Systems, P.J.Moran and W.S.Laird, US Naval Academy Report USNA-EW-10-92, Annapolis, MD, 1992

79. Evaluation of As Received Corrosion Resistant Coatings on Fasteners for Shipboard Topside Combat Systems II, P.J.Moran and W.S.Laird, US Naval Academy Report USNA-EW-15-92, Annapolis, MD, 1992

80. Passivity of 1018 Carbon Steel in Dimethoxyethane with LiAsF6 - Observation of Electropolymerization, D.A.Shifler, P.J.Moran &J.Kruger, Electrochem. Acta, Vol.38, No.7, pp.881-888, 1993

81. The Anodic Behavior of Iron in Anhydrous Dimethoxyethane and Passivation by Solvent Electropolymerization, J.F. Scanlon, J.Kruger & P.J. Moran, J. Electrochem. Soc., Vol.140, No.5, pp.1268-1274, 1993

82. Corrosion and Corrosion Prevention, P.J.Moran and P.M. Natishan, Kirk-Othmer Encyclopedia of Chemical Technology, Fourth Edition, Vol.7, pp.548-572, J. Wiley and Sons, NY, 1993

83. Hydrogen Cracking Initiation of a High Strength Steel Weldment, P.A.Klein, R.A.Hays, P.J. Moran, and J.R.Scully, ASTM Special Technical Publication # 1210, Slow Strain Rate Testing for the Evaluation of Environmentally Induced Cracking: Research and Engineering Applications, R.D. Kane, Ed., ASTM, Phila., PA, pp.202-222, 1993

84. Evaluation of the Corrosion Behavior of Nitrogen Atomized 304L Stainless Steel, C.C.Streinz and P.J.Moran, US Naval Academy Report USNA-EW-14-93, Annapolis, MD, 1993

85. Crevice Corrosion of a Nickel-Based Superalloy in Natural and Chlorinated Seawater, B.A.Shaw, P.J.Moran, and P.O.Gartland, Proc. 12th Internat. Corr. Congress, Houston, TX, Sept 19-24, pp. 1915-1928, NACE, International, Houston, TX, 1993

86. The Passivity of Carbon Steel in Organic Solutions, D.A.Shifler, P.J.Moran, and J.Kruger, 12th Internat. Corr. Congress, Houston, TX, Sept 19-24, pp.2131-2141, NACE International, Houston, TX, 1993

87. The Effects of Water on the Passive Behavior of 1018 Carbon Steel in Organic Solutions, D.A. Shifler, P.J.Moran, and J.Kruger, J. Electrochem. Soc., Vol.141, No.4, pp.934-939, 1994

88. Microellipsometric Study of the Passive Film Formation on Al-Ta Alloys: I. Solid Solution Alloys, C.C.Streinz, J.Kruger, and P.J.Moran, J. Electrochem. Soc., Vol.141, No.5, pp.1126-1131, 1994

89. Microellipsometric Study of the Passive Film Formation on Al-Ta Alloys: II. The Role of Al3Ta Precipitates in Breakdown, C.C.Streinz, P.J.Moran, J.Kruger, and J.W.Wagner, J. Electrochem. Soc., Vol.141, No.5, pp. 1132-1137, 1994

90. The Passive Behavior of 304 Stainless Steel in Dimethoxyethane Solutions, D.A.Shifler, P.J. Moran, and J.Kruger, Electrochimica Acta, Vol.39, No.16, pp.2407-2413, 1994

91. Effect of Microstructure on Passive Film Formation and Breakdown on Sputter Deposited Al-Ta Alloy Films, J. Kruger, R.S.Lillard, C.C.Streinz, and P.J.Moran, Materials Science and Engineering A, A198, pp.11-18, 1995

92. The Use of Local Electrochemical Impedance Spectroscopy to Examine Coating Failures, R.S. Lillard, J.Kruger, W.S.Tait and P.J. Moran, Corrosion, Vol.51, No.4, pp.251-259, 1995

93. The Effects of Water Additions on the Passivity of Iron in Dimethoxyethane Solutions, J.F. Scanlon, P.J.Moran and J.Kruger, J. of Power Sources, Vol.54, pp.85-91, 1995

94. The Passive Behavior of 304 Stainless Steel in PC/Water and DME/Water Mixtures, D.A.Shifler, P.J.Moran, and J. Kruger, Electrochimica Acta, Vol.40, No.7, pp.897-905, 1995

95. The Effects of Water on the Passive Behavior of 1018 Carbon Steel in Organic Solutions, D.A. Shifler, J.Kruger, and P.J.Moran, Proc. Of the H.H.Uhlig Memorial Symposium, Miami Beach, Ohio, May, 1994, Electrochem. Soc. Proc. Vol. 94-26, pp.14-29, Electrochem. Soc., 1995

96. The Passive Behavior of Metals and Alloys in Neutral Non-Aqueous Organic Solutions, J.Kruger, D.A.Shifler, J.F.Scanlon and P.J.Moran, Russian Journal of Electrochem., Vol. 31, No. 10, pp. 1087-1092, 1995.

97. Corrosion Monitoring in Supercritical Water Media, M.K.Sunkara, A.K.Rawat, and P.J.Moran, New Techniques in Characterizing Corrosion and Stress Corrosion, Eds. D.R. Baer and R.H. Jones, pp. 305-315, TMS/ASM, 1995

98. Dramatically Improved Corrosion Behavior of 304L Stainless Steel Through Nitrogen Atomization, C.C.Streinz, P.J.Moran, F.S.Biancanello, R.D.Jiggetts and M.E.Williams, P/M in Aerospace, Defense and Demanding Applications - 1995, pp. 123-127, Metal Powder Industries Federation, Princeton, NJ, 1995

99. Effect of Exposed Time at Sensitizing Temperature on the Sensitization of 302 Stainless Steel, S. Drayton, H.L. Lee, and P.J. Moran, U.S. Naval Academy Report # EW-04-95, Annapolis, MD 1995

100. Effect of Exposed Area on the Sensitization of 302 Stainless Steel, E. Hayes, H.L. Lee, and P.J. Moran, U.S. Naval Academy Report # EW-05-95, Annapolis, MD 1995

101. Effect of Heat Treatment on the Sensitization of 302 Stainless Steel, J. Hopper, H.L. Lee, and P.J. Moran, U.S. Naval Academy Report # EW-06-95, Annapolis, MD 1995

102. Effect of Heat Treatment on the Sensitization of Duplex Stainless Steel, S. Drayton, H.L. Lee, and P.J. Moran, U.S. Naval Academy Report # EW-07-95, Annapolis, MD 1995

103. Effect of Cooling Rate on the Sensitization of Duplex Stainless Steel, E. Hayes, H.L. Lee, and P.J. Moran, U.S. Naval Academy Report # EW-08-95, Annapolis, MD 1995

104. Methods for Detecting the Sites of Localized Corrosion Applicable to Pipelines, M.Sunkara, A.K. Rawat, P.J.Moran, R.A.Hays and E.J.Taylor, Proc. Vol. 95-16, Critical Factors in Localized Corrosion II, p.413, Electrochem. Soc., 1996

105. Effects of Sulfides on the Passivity of Carbon Steel in Organic Solutions, D.A.Shifler, P.J. Moran and J.Kruger, Electrochimica Acta, Vol. 42, No. 4, pp. 567-577, 1997

106. Detection of Crevice Corrosion in Natural Seawater Using Polarization Resistance Measurements, M. Inman, E. Taylor, A. Rawat, M. Sunkara, R. Kain, P. Moran, and R. Hays, Paper No. 296, Corrosion 97, NACE Annual Conference, New Orleans, LA, March 1997.

107. Detection of Crevice Corrosion Under an O-Ring by Polarization Resistance Measurements Using Electrodes Imbedded in the O-Ring, M. Inman, A. Rawat, E. Taylor, and P.Moran, Paper No. 312, Corrosion 97, NACE Annual Conference, New Orleans, LA, March 1997

108. Characterization of Cathodically Deposited Carbonaceous Films on a Silicon Substrate, S.E. Kwiatek, V. Desai, P.M. Natishan and P.J. Moran, J. Materials Science, 32, pp. 3123-3128, 1997

109. Detection and Monitoring of Crevice Corrosion Inside Pipe Flanges, M.E. Inman, E.J. Taylor, D.L. Myers, P.J. Moran, and R.M. Kain, Proc. of 1997 Tri-Service Conf. on Corrosion, Wrightsville Beach, NC, November, 1997

110. Passivity and Breakdown of Carbon Steel in Organic Solvent Mixtures of Propylene Carbonate and Dimethoxyethane, D.A. Shifler, J. Kruger, and P.J. Moran, J. Electrochem. Soc., Vol. 145, No. 7, pp. 2396-2404, July 1998

111. Passivity and Breakdown of Carbon Steel in Organic Solvent Mixtures of Propylene Carbonate and Dimethoxyethane, D.A. Shifler, J. Kruger, and P.J. Moran, Passivity and Breakdown, Eds. P. Natishan, H.S. Isaacs, M. Janik-Czachor, V.A. Macagno, P. Marcus, and M. Seo, Proc. Vol. No. 97-26, Electrochem. Soc., p. 432, 1998

112. Effects of Cooling Rate and Annealing Treatment on Sensitization of Austenitic-ferritic Duplex Stainless Steel, H.L. Lee and P.J. Moran, Metals and Materials, Vol. 4, No. 5, pp. 1085-1091, 1998

113. Metastable Pitting Behavior of Single Crystal Surfaces of Pure Aluminum, P.J. Moran, B.W. Davis, and P. M. Natishan, Proc. of Critical Factors in Localized Corrosion IV, Electrochem. Soc., Proc. Vol. No. 98-17, pp. 215-222,1999

114. Jerome Kruger: Corrosionist and Gentleman, P.J. Moran and R.P Frankenthal, Proc. of Critical Factors in Localized Corrosion IV - A Symposium in Honor of the 70th Birthday of Jerome Kruger, Electrochem. Soc., Proc. Vol. No. 98-17, pp. xi-xv, 1999

115. Passivity and Breakdown of Passivity of 1018 Carbon Steel in PC-DME-Water Mixtures, D. A. Shifler, P.J.Moran, J. Kruger, Proc. of Critical Factors in Localized Corrosion IV, Electrochem. Soc. Proc. Vol. No. 98-17, pp. 72-88, 1999

116. Metastable Pitting of Aluminum Single Crystals, B.W. Davis, P.J. Moran, and P.M. Natishan, Corrosion Science, Vol 42, pp. 2187 - 2192, 2000

117. Corrosion and Corrosion Control, P.J.Moran and P.M.Natishan, The Concise Encyclopedia of Chemical Technology, John Wiley and Sons, Inc. (in press)

118. The Influence of Water on the Passivity and Breakdown of Iron, Nickel, and Ferrous Alloys in Aprotic Organic Solvent Solutions, D.A. Shifler, P.J. Moran, and J. Kruger, Proceedings of Passivity 8, Jasper, Alberta, CANADA (in press)

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Midshipmen Corey Poorman, U.S. Naval Academy, Trident Scholar, 1998-99
"Development of Polyurethane Coated Propellors" (Currently an Officer in the U.S. Navy)

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"Influence of Crystal Orientation on the Pitting Behavior of Aluminum" (Currently an Officer in the US Navy)

Dr. Ashwani Rawat, Ph.D. 1996, Univ. Of Central Florida (co-advised by Dr. Vimal Desai (UCF))
"Advanced Methods for the Detection of Crevice Corrosion in Passive Alloys in Seawater" (Currently Research Scientist, Rodel, Inc., Newark, DE)

LT Sandra Kwiatek, M.S. 1995,Univ. of Central Florida (co-advised by Dr. Vimal Desai (UCF) and Dr. Paul M. Natishan (NRL)) "Electrodeposition of Diamond Like Films from Organic Solutions" (Currently Materials. Engr., Private Industry)

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"The Effects of Prior Pitting Damage on Repassivation Potential" (Currently an Officer in the U.S. Marine Corp)

Dr. David A. Shifler, Ph.D. 1993, Johns Hopkins Univ. (co-advised with Dr. Jerome Kruger)
"Passivity and Passivity Breakdown of 1018 Carbon Steel and 304 Stainless Steel in Nonaqueous Solvents and Mixed Solutions" (Currently Metallurgist, Naval Surface Warfare Center, Carderock, MD)

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"The Influence of Heat Treatment and Rapid Processing on the Passivity and Corrosion Behavior of Stainless Aluminum Alloys" (Currently Research Scientist, Cabot Corp.)

Dr. R. Scott Lillard, Ph.D. 1992, Johns Hopkins Univ. (co-advised with Dr. Jerome Kruger)
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"The Influence of Heat Treatment on the Performance of Highly Corrosion Resistant Al Alloys" (Currently an Officer in the U.S. Marine Corp)

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"Influence of Acid Deposition on the Degradation of Organic Coatings used on Steel Structures" (Currently Engr. Supervisor, Bethlehem Steel Corporation Research Laboratories, Bethlehem, PA)

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"The Influence of Weld Microstructures in High Strength Steels on Hydrogen Uptake and Embrittlement" (Currently Materials Engineer, Baltimore Gas and Electric Co., Baltimore, MD)

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"Changes in Metallurgy and Electrochemistry of Commercial Purity Polycrystalline Silver Wire Resulting from Annealing at Different Temperatures" (Currently Research Chemist, Allied Bendix Corp., Baltimore, MD)

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"Continued Studies of the Rate Limiting Mechanisms of Lithium Iodine (P2VP) Batteries" (Currently Research Scientist, Cabot Corp.)

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"Characterization of the Corrosion Behavior of Aluminum, Zinc, and Zinc Aluminum Thermal Spray Coatings" (Currently Assoc. Professor, Pennsylvania State University, State College, PA)

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"Investigations of Pitting Corrosion of Aluminum and Aluminum Based Metal Matrix Composites" (Currently Materials Engineer, Naval Surface Warfare Center, Carderock, MD)

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"Unique Four Electrode Technique for Measurement of Electrolyte Conductivity" (Currently Materials Engineer, Baltimore Gas & Electric Co., Baltimore, MD)

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"Influence of Iron Impurity Deposition on the Catalytic Performance of Nickel 200 Cathodes in Alkaline Water Electrolysis" (Currently Materials Scientist, Optimetrics, Aberdeen, MD)

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"Time Dependent Energy Efficiency Losses at Nickel Cathodes in Alkaline Water Electrolysis Systems" (Currently Research Supervisor, Bethlehem Steel Corporation Research Laboratories, Bethlehem, PA)