



Summary Curriculum Vita of

Joseph H. Groeger

President

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Education:

1979 B.S. Mechanical Engineering and Materials Science,
University of Connecticut

1982 M.S Metallurgy,
University of Connecticut

PhD (course work, research completed) Materials Science
University of Connecticut

Positions Held:

2000 – present President, Mantis Associates, Inc. Business is dedicated to product development and forensic analysis in drug delivery devices/systems, electrical power equipment, consumer products, and food packaging. Mantis also specializes in materials development and applications and selected areas of litigation support.

1992-2000 Vice President, Altran Corporation. Position included developing business, conducting failure analyses on a wide range of materials, product development, specialized materials development and processing, direction of laboratory facility, and preparation of technical reports. Litigation support, management consulting, manufacturing support, and product development were key activities associated with the business.

1986-1992 Associate Director, Electrical Insulation Research Center, University of Connecticut. Position included solicitation and administration of research grants (approx \$1.5M), direction of research, supervision of

research staff, direction of graduate students, and extensive publication and presentation of research results. Research included failure analysis and long-term research on polymers, metals, composites, and specialized equipment used in the electric power utility industry.

1984-1985 Special Instructor, Dept. of Forensic Science, University of New Haven (concurrent with University of Connecticut position).

1978-1986 Instructor, Department of Chemistry, University of Connecticut. Taught graduate course in microscopy and analysis of polymers and composite materials (Chemistry 386), guest-instructed Special Topics courses in Chemistry and Polymer Science.

1978-1986 Research Associate - Institute of Materials Science, University of Connecticut. Position involved direction of the Materials Science microscopy and microchemistry laboratories. Responsibilities included original research, seminar presentation, industrial research and failure analysis, and equipment acquisition through research grants.

1975-1978 Research Assistant III - Institute of Materials Science, University of Connecticut. Supervised daily operations in microscopy and microanalysis laboratory, making extensive use of electron and optical microscopy, X-ray microanalysis, and image analysis methods. Performed a wide variety of characterization and failure analysis of polymers, metals, and composite materials.

1973-1975 Student labor for Metallurgy Department Chairman at the University of Connecticut. Position required extensive research in stress corrosion cracking of alpha brass alloys and original research in fracture mechanics, including fatigue crack propagation studies in titanium 6-4 alloys in various environments and elevated temperature. Extensive fractographic and metallographic analyses and results were published, then funded by the US Air Force for continuation.

Professional Societies:

International Association for Identification
Northeast Association of Forensic Scientists
Electron Microscopy Society of America
Connecticut Electron Microscopy Society (past President)
Institute of Electrical and Electronics Engineers (Senior Member)
New England Society for Electron Microscopy
Society of Plastics Engineers
American Society for Materials
Insulated Conductors Committee of IEEE (Voting member)
Power Engineering Society of IEEE (Voting Member)
Society of Plastics Engineers

Honors and Distinctions:

Stanley Works Foundation Award and Scholarship for undergraduate research in metallurgy (1974-1975)
Sigma Xi scholarship for metallurgy research (1975)
Consultant to the Connecticut State Police and Forensic Science Laboratory (Commissioner's Appointment, 1978 - present)
IEEE Best Technical Publication Award, 1988
Chairman, IEEE Subcommittee 7-40 (Manhole Fires & Explosions) 1992-present
Member, IEEE Subcommittee 3-83 (Class 1E Cables for Nuclear Plants)
Co-Founder, IEEE Subcommittee 5-29 (Properties and Performance of Semiconducting Compounds)
US National Best Paper Award, CIGRE, 1990
President, Mansfield Middle School Parents Association

Fields of Specialization:

Microscopy, materials science, polymer science, metallurgy, microbeam analysis, fractography, forensic sciences, electrical materials, failure analysis, packaging materials, microspectrophotometry.

Patents

"Novel Silicone Greases and their Method of Preparation", US Patent 5,127,744

"Food Wrap with Novel Cling Layer", US patent 5,948,493

"Ion Scavenging Cable Jacketing and Insulation Protective Systems", US Patent 6, 005,192

"Surface Modification of Pressure Sensitive Adhesive To Control Cling", US Patent pending

"Valve Assembly for Metered Dose Dispensers", UK patent GB2361228

"Novel Materials and Design for Metered Dose Dispensers", UK patent GB 2361229

"A Method for Applying A Polymer Coating to the Internal Surface of A Container"
International Patent WO 01/51222 A1

Publications

- 1) Ebara, R., K. Inoue, S. Crosby, J. Groeger, and A.J. McEvily, "On Environmental Effects In Fatigue", Proceedings of the Second International Conference on Materials, Boston, 1976.
- 2) McEvily, A.J., and J.H. Groeger, "On the Threshold for Fatigue Crack Growth", Proceedings of the Fourth International Conference On Fracture, Ontario, 1977.
- 3) Groeger, J.H., S.F. Wayne, H. Nowotny, and S. Rice, "Wear of Copper and Copper Alloys Under Repetitive Impact Sliding", Materials Science and Engineering, Vol. 49, 1978.
- 4) Groeger, J.H., K. Mio, D. Damon, J. Tanaka, "Examination of Failed Crosslinked Polyethylene Cables", Proceedings of the First International Conference On Conduction and Breakdown In Solid Dielectrics, France, 1983.
- 5) Groeger, J.H., "Computerized Image Analysis-Applications and Case Studies in Dielectrics", Proceedings of the First International Conference On Conduction and Breakdown In Solid Dielectrics, France, 1983.
- 6) Groeger, J.H., "Computerized Image Analysis of Dielectrics" (invited paper), IEEE Transactions on Electrical Insulation, vol. EI-19 3, 1984.
- 7) Groeger, J.H., "Analysis of Polyethylene Cable Insulation Using Microspectrophotometry", Proceedings of the International Symposium On Electrical Insulation, Montreal, 1984.
- 8) Cercena, J., J.H. Groeger, et. al., "Highly Crosslinked CR-39 Polycarbonate and its Degradation by High Energy Radiation", ACS Symposium series (text) #243, Characterization of Highly Crosslinked Polymers, Lentana and Dickie, ed., 1984.
- 9) Groeger, J.H. and E. Rand, "Microscopy Analysis Techniques for EPR Cable Insulation", IEEE/EIC Conference Proceedings, Boston, 1985.

- 10) Pease, D.M., F. Namovar, J.H. Groeger, et.al., "Modifications In the Unit Cell Geometry of Sputtered Niobium Films Caused by High Energy Ion Bombardment", Thin Solid Films, vol. 120, 1984.
- 11) Huang, S.J., C.S. Yang, J.H. Groeger, and J.F. Johnson, "Structure-Property Correlation for CR-39 Polycarbonate In Dosimetry", Proceedings of the 1985 International Nuclear Track Society, 1985.
- 12) Hadlock, D.M., M.A. Parkhurst, C.S. Yang, J.H. Groeger, and J.F. Johnson, "Electrochemical Development of Particle Tracks In CR-39 Neutron Dosimeters", Proceedings of the 1985 International Nuclear Track Society, 1985.
- 13) J.H. Groeger, T.M. McNickle, and J.F. Johnson, "Thermal Microscopy Systems for the Study of Polymeric Materials", Proceedings of the 14th North American Thermal Analysis Society (NATAS) Conference, San Francisco, pp 140-146, 1985.
- 14) Groeger, J.H., D. Damon, S. Pelissou, and J.P. Crine, "Experimental Difficulties and Significance of Water Content Measurements In Cable Insulations", Proceedings of the JICABLE International Conference On Polymeric Cable Insulation, Versailles, 1987.
- 15) Mashikian, M.S., and J.H. Groeger, "Ionic Impurities In Extruded Cable Insulation: Analytical Detection Techniques, Sources, Nature, and Effects", Proceedings of the JICABLE International Conference On Polymeric Cable Insulation, Versailles, 1987.
- 16) Groeger, J.H. and M.S. Mashikian, "Evaluation of Epoxy Composite GIS Insulators by Advanced Microscopy Techniques", Proceedings of the IEEE/EIC Conference, Chicago, 1987.
- 17) Johnson, J.F., J.H. Groeger, M.S. Mashikian, B. Bernstein, and A. Cooper, "Sensitive Analytical Methods for Early Diagnosis of Aging In Solid Insulation Under Voltage Stress", Proceedings of the 1988 CIGRE International Conference, Paris, 1988.
- 18) Mashikian, M.S., J.H. Groeger, and E. Ildstad, "Role of Semiconducting Compounds In the Premature Aging of XLPE Cable Insulation", Proceedings of the IEEE International Symposium On Electrical Insulation, Boston, 1988.

- 19) Groeger, J.H., J. Henry, and A. Garton, "Location and Concentration of Ionic Impurities In Polymeric Cable Insulation", Proceedings of the IEEE International Symposium On Electrical Insulation, Boston, 1988 (1988 IEEE Best Technical Publication Award).
- 20) DiBenedetto, A.T., L. Nicolais, L. Ambrosio, and J.H. Groeger, "Stress Transfer and Fracture In Single Fiber/Epoxy Composites", Composite Interfaces, vol. I, H. Ishida and J.L. Koenig Ed., Elsevier Science Publ. Co. NY, 1986.
- 22) DiLandro, L., A.T. DiBenedetto, and J.H. Groeger, "The Effect of Stress Transfer On the Strength of Carbon-Reinforced Composite Materials", Polymer Composites, 1988.
- 23) J.H. Groeger, M.S. Mashikian, and S. Dale, "Laboratory Tests On the Role of Impurities In Semiconducting Shield Materials On the Degradation of XLPE Cable Insulation", Doble Clients Conference, 1989 (invited paper)
- 24) J.H. Groeger, "Improving Cable Materials: Applying Research and Failure Analysis Experience", proceedings of the 1988 IEEE Transmission and Distribution Conference, New Orleans (invited paper).
- 25) J.H. Groeger, M.S. Mashikian, B. Bernstein, S. Dale, and E. Barry, "Surmounting Pitfalls In the Application of Diagnostics for Characterization of Aged Polymeric Cable Insulation", Proceedings of the CIGRE International Symposium on High Voltage Electrical Systems, Paris, 1990.
- 26) J.M. Braun and J.H. Groeger, "Analysis of Gases within Epoxy Composite Spacers Used for GIS Equipment", record of the IEEE Conference On Electrical Insulation and Dielectric Phenomena, 1989.
- 27) M. Ezrin and J. H. Groeger, "Examination of Field Failures of Fiberglass Rod Guy Strain Insulators" Proceedings of the Society of Plastics Engineers Annual National Technical Conference (ANTEC), Dallas, 1989.
- 28) J.H. Groeger and M.S. Mashikian, "Analysis of Epoxy Composite High Voltage GIS Spacers and Spacer Materials", Proceedings of the Nordic Insulation Society International Symposium, 1990, Copenhagen.

- 29) A. Garton, J. H. Groeger, and J. Henry, "Ionic Impurities In Crosslinked Polyethylene Cable Insulation", IEEE Transactions On Electrical Insulation, vol. 25, 2, pp. 427-434, April, 1990.
- 30) Groeger, J.H., "Applications of Ultrasonic NDE Techniques for Location and Characterization of Defects In Epoxy Composite GIS Spacers", Proceedings of the IEEE International Symposium On Electrical Insulation, 443-448, Toronto, 1990.
- 31) Groeger, J.H., "Aging Characteristics and Long-Term Performance of Silicone Lubricants for Separable Interface Electrical Connectors", Proceedings of the Doble International Clients Conference, Boston, 1991 (invited paper).
- 32) Groeger, J.H., "Degradation of Polymeric Electrical Insulators in Outdoor Applications", Proceedings of the Society of Plastics Engineers ANTEC Conference, Montreal, 1991.
- 33) Groeger, J.H., "Long-Term Performance of Silicone Lubricants Used for Separable Interface Electrical Connectors", Proceedings of the Jicable Third International Conference on Polymer Insulated Power Cables, Versailles, 1991.
- 34) Lefebvre, S.D., Groeger, J.H., Tomme, M., and Sifleet, W.L., "Wet Electrical Aging Characteristics of Various Furnace Carbon Blacks", Proceedings of the Jicable Third International Conference on Polymer Insulated Power Cables, Versailles, 1991.
- 35) Mashikian, M.S. and Groeger, J.H., "Aging Phenomena at Cable-Shield Interfaces Affecting the Propensity of the Insulation to Develop Water Trees", Proceedings of the Jicable Third International Conference on Polymer Insulated Power Cables, Versailles, 1991.
- 36) Groeger, J.H., "Characterization of Service-Aged Polymeric Insulators for Medium Voltage Power Applications", Proceedings of the Insulated Conductors Committee Meeting, Birmingham, England, 1992.
- 37) Groeger, J.H. and Mashikian, M.S., "Long-Term Service Degradation of Polyethylene and Rubber Insulated Power Cables", Proceedings of the 40th International Wire and Cable Symposium, St. Louis, 1991.

- 38) Jeffery, A., Groeger, J.H., and Damon, D.H., "Influence of Formulation On the Dielectric Response of Ethylene-Propylene Rubber Insulation Compounds", Proceedings of the IEEE Conference on Electrical Insulation and Dielectric Phenomena", Victoria, BC, 1992.
- 39) Mashikian, M.S., Groeger, J.H., Bernstein, B.S., Eichhorn, R.M., Hartlein, R.A., and Hwang, B., "Water-Treeing Propensity Tests of Materials and Cables in the United States", Proceedings of the CIGRE International Symposium on High Voltage Electrical Systems, Paris, 1992.
- 40) Mashikian, M.S. and Groeger, J.H., "Aging Phenomena At Cable-Shield Interfaces Affecting the Propensity to Develop Water-Trees", Revue Generale De L'Electricite (General Revue of Electricity), January, 1992, Paris. (invited contribution)
- 41) Walton, M.D., Bernstein, B.S., Smith, J.T., Thue, W.A., and Groeger, J.H., "Accelerated Cable Life Testing of EPR-Insulated Medium Voltage Distribution Cables", IEEE Transactions On Electrical Insulation, January, 1994.
- 42) Groeger, J.H. and Esselman, T.C., "Aging of Outdoor Polymeric Insulators for Outdoor Medium Voltage Distribution Applications", Proceedings of the IEE First International Conference On Electrical Distribution, Sao Paulo, Brasil, 1993.
- 43) Groeger, J.H., Compton, L.M., and Davido, M.P., "Forensic Analysis of Degraded and Ruptured Fabric Reinforced Elastomeric Diaphragms for Large Valve Applications", Society of Plastics Engineers Annual Technical Meeting, Boston, April, 1995.
- 44) Groeger, J.H. and Compton, L.M., "Unexpected Contamination from Pharmaceutical Packaging: Sources and Solutions", Society of Plastics Engineers Annual Technical Conference, April, 1996 (invited paper).
- 45) Groeger, J.H. and Compton, L.M., "Identifying and Preventing Contamination from Pharmaceutical Packaging", Medical Plastics and Biomaterials, May, 1997 (invited paper).
- 46) Groeger, J.H., Riley, J.M., and Nicoll, J.D., "Case Studies of Inadvertent Interactions between Polymers and Devices In Field Applications", Society of Plastics Engineers Annual Technical Conference, Atlanta, April, 1998 (invited paper)