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Gary Hattery Director of Operations

EDUCATION

B.S., Chemistry, Purdue University, 1976

S.M., Chemical Engineering, Massachusetts Institute of Technology, 1978

M.B.A., Finance, Ohio State University, 1982

QUALIFICATIONS

Mr. Hattery began work at Emc² and as a supporting PolymerOhio consulting expert in bio-based materials and biomedical devices in November 2007 after working in the Advanced Materials Applications group at Battelle Memorial Institute for 30 years. At Emc², Mr. Hattery has positioned his technical efforts in the rapidly developing areas of specialty materials from agricultural and bio-based resources. Additionally, he maintains his currency in the biomaterials and biomedical applications fields. For the last decade of his career at Battelle, Mr. Hattery was responsible for the operations and financial success of one of the largest independent materials research groups in the United States. Mr. Hattery has been intimately involved in helping develop the strategic plans and implementation of these plans in order to grow the group at a CAGR greater than 14% since 2000. On his watch, this group earned eight R&D 100 awards over the last decade. In his 30 years at Battelle, Mr. Hattery's experience has encompassed technical, programmatic, and line management responsibilities. He has managed or provided technical leadership for several multi-year, multimillion-dollar efforts for trade associations (e.g., Electric Power Research Institute on aging of buried high-voltage dielectric insulators; as well as Gas Research Institute on life prediction for buried plastic pipe and for identification and development of the next-generation high-pressure distribution piping system). He also has managed staff in performing government programs (e.g., DOE evaluation of new insulation materials for dielectric cables; DoD Determination of the Susceptibility of Materials When Exposed to Chemical Agent; Evaluation of Materials of Construction for Joint Strike Fighter).

Over his career, Mr. Hattery has been a significant contributor to more than 1,000 projects ranging from deep-sea submersibles to the space shuttle, and from nanomaterials such as helping to develop an approach to lubricious coatings on gastrointestinal devices to megaprojects such as materials selections for the Alyeska Pipeline. His technical areas of specialization encompass polymer characterization technologies, assessment of material resistance to extreme environments (e.g., high temperatures, radiation, marine corrosion, in situ exposure to biological environments, and chemical agents) and the application of polymers in bio-based and biomedical products. He has developed methods to predict the service and shelf life of a diverse range of products ranging from intravenous fluid administration sets to composite helicopter blades to insulated electric cable. Mr. Hattery has managed projects dealing with every aspect of product development, from

synthesis and raw materials specifications for specialty polymers used in the medical community (PVP, PHEMA, Polyurethanes, UHMWPE, etc) to product assurance/quality assurance for finished goods, such as implantable medical devices used as joint replacements or in catheterization and angioplasty operations.

RELEVANT EXPERIENCE

Project/Program Management.

- *Government Client Sensitive Programs.* Led the Materials Durability and Accelerated Aging Group, providing technical and financial leadership on two major government client sensitive programs. Led a large scale program, under cGMP requirements, to develop and manufacture a sensitive pharmacological product for US Military Medical Command.
 - *Commercial Medical Client Sensitive Programs.* Led several programs over the years to develop such products as synthetic substitute for latex materials in contraceptive diaphragm applications, develop a multilayer co-extruded product to replace vinyl in blood bags and other medical container products, develop a controlled tack adhesive for ostomy type applications, etc.
 - *Forensic Analysis.* Led the efforts of more than 20 staff and subcontractors in rapidly identifying and evaluating client field samples. The program had as many as 100 sample sets in a single year and peaked at approximately \$10 million/year in size. Provided both technical and management support to this program.
 - *System Development.* From 1997 to 2002, served as the Financial Manager of a large system development program for a government client sensitive client. During this period, the program grew from approximately 50 to 150 full-time equivalents, along with 10 subcontractors and consultants. Established a program management schedule; developed work breakdown structures; determined earned value; negotiated contracts and agreements with subcontractors and consultants; led facilities modernization and renovation valued at more than \$5 million; made monthly and quarterly presentations to client staff; and worked with Task Leads and line management across several Battelle product lines to ensure that client technical and product deliverables were met.
 - *Materials Susceptibility to Chemical Warfare Agent.* For Edgewood Research, Development and Engineering Center (now Edgewood Chemical/Biological Center), led a multi-year, multi-task program to identify the resistance of more than 200 materials to specific chemical warfare compounds. Included in this work was some of the first use of molecular modeling algorithms to predict material resistance “in silico” and comparison to laboratory results. These efforts have been a springboard for continuing work to determine construction materials for military platforms such as the ITT Bowman radio, the P&W F135 engine, and the JSF platform. More than two dozen materials staff members have worked on these programs over the past 10 years at a total budget of more than \$2 million.
 - *Gas Research Institute “Pipe Dreams Program.”* In the early 1990s was selected by the Gas Research Institute to lead an international team of A&E firms (Fluor Daniel), scientists, pipeline engineers, futurists, and business scenario development specialists to create a total
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vision of the methods for distributing natural gas and other gaseous or liquid fuel out to the year 2020. This work was a \$3 million, 1-year effort that was extended for an additional 2 years, with additional funding of more than \$1.5 million. Many of the ideas resulting from this program have already become industry practice, such as composite piping system, quick-disconnect unions for attaching gas appliances, detectable plastic gas lines, and sliplining of new piping material inside old, corroded pipe to minimize service disruption and maintenance cost associated with trenching and backfill.

Technical Leadership.

- *Materials Selection.* Participated in numerous programs to identify performance parameters and operating criteria for thermosets, thermoplastics, and composites in industrial, consumer, medical and government applications. Work has involved comparative analysis of competing materials technologies and selection of the most appropriate materials based on performance factors. Conducted screening tests of materials for down selection into military applications where chemical agent hardness is required.
 - *Packaging.* Conducted several programs focused on materials and economics for packaging items such as electronics, foodstuffs, military MREs, and industrial products. Invited speaker at a 1997 Eastman Chemical seminar on packaging products and processes for the next millennium.
 - *Characterization of Extruded Dielectric Cable.* Lead analytical polymer chemist for EPRI and DOE projects to characterize changes in field-aged and laboratory-aged polyethylene insulation in high-voltage electric cables. Techniques used included thermal analysis; molecular weight analysis; microscopy, both optical and emission (SEM, TEM); as well as additive analysis by chromatography to follow changes in cable physical and morphological properties that could affect breakdown characteristics of the cables. Analytical results led to several correlations between the environment and breakdown behavior as possible mechanisms for cable failure.
 - *Polymer Characterization.* Contributed to projects to characterize the service life and degradation rates of products such as urethane foam and laminated tabletops. Studied the destabilization of polyvinyl chloride by carbon black using electron spin resonance spectroscopy. Characterized the purity of compounds ranging from nitroglycerin to epoxy prepregs and was instrumental in determining the effect moisture had in lowering the glass transition of epoxies used as blade coatings for military helicopters. Helped characterize fractionated samples of poly (vinyl pyrrolidone) to be used as narrow molecular weight standards on a GPC.
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PROFESSIONAL RECOGNITION AND AFFILIATIONS

Author or co-author of approximately a dozen papers on service life testing and radiation effects on polymers

Member, American Chemical Society and several of its divisions

Member, Society of Plastics Engineers

Member, American Management Association

2007 R&D 100 Award: Reactive Bio-Polyols

2003 R&D 100 Award: Readily De-inkable Soy Based Toner (Tofu Toner)

2002 R&D 100 Award: Environmentally Benign BioBased Plasticizer

Management Team, Ohio BioProducts Innovation Center

Board of Advisors, PolymerOhio Edison Center, State of Ohio Department of Development

The Ohio State University Technology Commercialization Office - Engineering and Physical Sciences Advisory Board

Board of Directors, Santal Solutions, Inc., Neenah, WI

Advisory Council, Ayurvedic Life, Inc., Neenah, WI

Board Chair, Godman Guild Association Settlement House, Columbus, OH
