



James K. Murray, Jr., Ph.D., Principal Investigator

Associate Professor of Organic Chemistry & Department Chair, Immaculata University

Dr. Jim Murray received his B.S. (1996) in Chemistry and his M.S. (1997) and Ph.D. (2003) in Organic Chemistry from Drexel University. During his undergraduate studies he worked as an analytical chemist analyzing polymer modifiers at Rohm & Haas Corporation and as an organic chemist in the medicinal chemist department of GlaxoSmithKline. Dr. Murray has over 15 years experience in organic synthesis, product isolation/purification, and nuclear magnetic resonance (NMR) spectroscopic analysis. He has been on the faculty of Immaculata University since the fall of 2001 teaching courses in organic, physical, and inorganic chemistry. Dr. Murray's research interests are in the areas of organic chemistry and organic chemistry education. He is interested in developing experiments that introduce new methodologies and techniques that can be used as effective teaching tools. Dr. Murray began his involvement with the nanotechnology program in the summer of 2006, initially working on experimental design and implementation. Since that time he has moved to working on course development and is the Principal Investigator on the current National Science Foundation (NSF) grant. Dr. Murray is a member of the American Chemical Society (ACS), Division of Organic Chemistry and Division of Chemical Education. He is an active member of the Philadelphia Organic Chemists' Club (POCC) and an Alternate Councilor for the Philadelphia Section of the American Chemical Society (ACS). In his spare time he enjoys classical music and history, in particular World War II and naval history.



David E. Luzzi, Ph.D., Co-Principal Investigator

Dean, College of Engineering, Northeastern University

David E. Luzzi, dean of Northeastern University College of Engineering, is a distinguished scientist and professor known for developing innovative interdisciplinary programs.

Luzzi is at the helm of Northeastern's first college as it celebrates its 100th anniversary in 2009. The College is hosting a variety of social and intellectual events throughout the year to promote this momentous occasion. The Engineering College is widely acclaimed for its innovative Cooperative Education - based Undergraduate and Graduate Degree Programs and its five prestigious national research centers. These federally funded centers are its National Science Foundation national centers of research in nanomanufacturing and subsurface sensing and imaging, its Department of Homeland Security Center of Excellence in Explosives Detection, its National Institute of Standards and Technology Center in Infrastructure Monitoring Technologies and its Department of Veterans Affairs Center in Healthcare Engineering.

Author of 120 scientific articles in peer reviewed publications, Luzzi is internationally renowned in nanotechnology, advising leaders in the United States and around the world. His discovery of the peapod class of nanomaterials landed him on the cover of Science and garnered worldwide press coverage.

In addition to his scholarly endeavors, Luzzi is the science and technology chair emeritus of the Air Force Scientific Advisory Board. As science and technology chair, Luzzi led reviews of the \$3.6B Air Force Research Laboratory program. From 1998-2000, Luzzi was a Science and Technology Fellow for the Chief of Naval Operations Strategic Study Group. For his work on behalf of the Department of Defense, Luzzi was awarded the Meritorious Civilian Service Medal in 2008.

Prior to joining Northeastern in 2007, Luzzi was on the faculty of the University of Pennsylvania for twenty years, where he established a reputation as an entrepreneurial leader in science and technology. He co-founded The Nanotechnology Institute, eventually expanding membership to 12 prestigious universities, colleges and research institutions. Obtaining \$16 million in core funding from the Commonwealth of Pennsylvania, Luzzi fostered partnerships with corporations in aerospace, biotechnology, chemical, medical device, and pharmaceutical and sensor industries. His workforce development, educational initiatives, and outreach programs have impacted thousands of students and teachers.

Luzzi holds a B.E. in engineering physics from the Stevens Institute of Technology, a Ph.D in materials science and engineering from Northwestern University, and an M.B.A. from the University of Pennsylvania's Wharton School of Business.

Outside of his work leading the college, Luzzi's life revolves around Marla, his wife of twenty years, and their twin boys.



Sr. Ann M. Heath, Ph.D., Co-Principal Investigator

Vice-President for Academic Affairs, Associate Professor of Mathematics, Immaculata University

Sister Ann Heath currently serves as the Vice President for Academic Affairs. She has held senior administrative positions since 1996, serving as Dean of the College of Graduate Studies for 13 years. Prior to that, she served as a fulltime faculty member holding the rank of associate professor of Mathematics and as Chair of the Department of Mathematics, Computer Science and Physics.

Sister Ann received her MA and Ph.D. degrees in mathematics and was selected to attend the Centre de Recherches Mathematique at the University of Montreal (1991) and, during her tenure as Dean, the MLE Summer Institute for Higher Education Leadership (2003) at Harvard University's Graduate School of Education. Sister Ann is a member of many professional organizations including the Association for Women in Mathematics and the American Mathematical Society.

Professional activities include serving as a site visitor for the Middle States Association for Higher Education where she has special interests in curriculum, mathematics, graduate education, and institutional governance. She has served as a member of the executive committee of the Northeastern Association of Graduate Schools and enjoys her association with the Phi Delta Kappa Honors Society of which she is a member. During her tenure as Dean she functioned as the campus Project Lead for the implementation of the Student modules of the Banner administrative computing system. She continues to explore avenues for advancing the university mission, supporting the scholarship of students and faculty, and developing opportunities for growth.



Barry F. Stein, Ph.D., Senior Project Consultant

Dr. Barry Stein has had 40+ years experience in research, R&D management, technology-based economic development, development and implementation of technology initiatives, and education. He is the retired Executive Vice President of the Ben Franklin Technology Partners of Southeastern Pennsylvania (BFTP/SEP). Dr. Stein holds a BA, MS, and Ph.D. in Solid State Physics from the University of Pennsylvania.

Most recently, Dr. Stein has been active in nanotechnology workforce and education, having initiated and directed while at BFTP/SEP a nanotechnology community college, high school, and middle school program funded by the National Science Foundation, the Department of Education, the Barra Foundation, and BFTP/SEP. He currently is a consultant to the University of Pennsylvania and Immaculata University, continuing work on the *Delaware Valley Nanobiotechnology Community College and High School Network project* and its follow-on, *Transforming the Tri-State Philadelphia Region: A Partnership for Innovation in Science & Technology Education*. He developed and has taught the course, *Introduction to Nanotechnology*, to high school teachers and, working with a team of middle school teachers, has developed the middle school level course. He has also created and presented the first of a series of one-day workshops, *Nanotechnology in the Classroom*, to both middle school and high school teachers in Philadelphia and suburbs.

He conceived of and was on the management team of the Nanotechnology Institute, a complex major regional technology initiative with research, commercialization, and education components that has received more than \$18 million in funding from the Commonwealth of Pennsylvania.



Mary J. Burch, Ph.D., Project Consultant

Dr. Mary Burch has had 30+ years of experience in research, executive R&D technology management and academia. During her career she has been on the leading edge of market driven technology strategy development and implementation as well as development of technical resources for industry and academia.

She has a BA in chemistry from the University of St. Catherine, St. Paul, MN, and a PhD in inorganic chemistry from the University of California, Berkeley. Following an NIH Postdoctoral Fellowship in biochemistry at Louisiana State University in New Orleans, LA, she was an Assistant Professor at Loyola University of Maryland.

Her career path led her to industry in 1986 to Rohm and Haas Corporation where she worked for 21 years in research and assumed positions of increasing responsibility leading to Executive Director of Global R&D for Architectural Coatings, Rohm and Haas' largest business unit, and a technology area closely tied to developments in nanotechnology.

Throughout her career she has held a personal core value of fostering learning in technical organizations and in technical personnel development. In the past two years, this has led her to work closely with academia and with industry to foster relationships, seeking partnerships through government funding in the process.

Dr. Burch is a member of the American Chemical Society and a former member of the Board of Directors of the Industrial Research Institute.