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**BRIDGING DISCIPLINES, INNOVATING SOLUTIONS: POLYMER EXPERT  
RECOGNIZED FOR INVENTIONS IN MATERIALS AND LIFE SCIENCES**

*Dr. Joseph M. DeSimone Awarded \$500,000 Lemelson-MIT Prize*

**CAMBRIDGE, Mass. (June 25, 2008)** – For Dr. Joseph M. DeSimone, the interface between seemingly disparate fields and concepts offers the best opportunity for invention and innovation. A well-recognized chemist and polymer expert, DeSimone has uniquely applied his skills to the development of groundbreaking solutions in green manufacturing, and promising applications in gene therapy and drug delivery, as well as medical devices. For his pioneering inventions, lab-to-marketplace entrepreneurship, and commitment to mentorship, DeSimone has been awarded this year's [\\$500,000 Lemelson-MIT Prize](#).

“DeSimone has established a stellar record of achievement and innovation,” said Dr. Robert S. Langer, Institute Professor at the Massachusetts Institute of Technology, who nominated DeSimone for the Lemelson-MIT Prize. “Joe is clearly one of the most inventive researchers in all of science.”

DeSimone, Chancellor’s Eminent Professor of Chemistry at the University of North Carolina at Chapel Hill and William R. Kenan, Jr. Distinguished Professor of Chemical Engineering at North Carolina State University, will accept his award and present his accomplishments to the public at the Massachusetts Institute of Technology during the second-annual [EurekaFest](#), a multi-day celebration of the inventive spirit, June 25-28, presented by the Lemelson-MIT Program.

**Creating Connections through Polymers**

Through his cross-disciplinary thinking, DeSimone blended polymerization methods with supercritical fluid extraction, yielding a breakthrough in “green” or environmentally sustainable manufacturing. He invented a process in which supercritical carbon dioxide — CO<sub>2</sub> that has gas and liquid properties — can be used in lieu of the environmentally persistent material perfluorooctanoic acid, to produce a class of high-performance plastics known as fluoropolymers. DeSimone’s process produces an enhanced-performance material used in wire and cable insulation and jackets, flexible tubing, and industrial films applications, which span several industrial markets including data communications, semiconductor, and automotive. DeSimone and his students also created surfactants, or detergents, for CO<sub>2</sub>, to use in tandem with his process for expanded industrial applications.

“DuPont has licensed DeSimone’s breakthrough fluoropolymer-creation process, and we have built commercial facilities based on the technology, leading to unique products and more environmentally sustainable manufacturing,” said Nandan S. Rao, Global Technology Director, DuPont Fluoroproducts. “His ideas are truly revolutionary and represent dramatic departures from what others have pursued.”

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DeSimone has also crossed polymers with the field of medical devices. He collaborated with a research team led by Dr. Richard Stack, Professor Emeritus in Cardiology at Duke University and president of Synecor LLC, in developing technology for a fully bioabsorbable, polymer-based stent to provide an alternative to metallic stents. Bioabsorbable drug-coated stents promise to eliminate the need for a permanent prosthetic, offering the potential to improve the long-term safety of coronary stents and save patients' lives. Guidant, now part of Abbott, purchased the technology from Synecor LLC, which is now in an international clinical trial for the treatment of coronary artery disease. This stent is the first of its kind to enter clinical trials.

In addition, DeSimone serves as director of the National Science Foundation's (NSF) Science and Technology Center (STC) for Environmentally Responsible Solvents and Processes in North Carolina. "Linking sustainable, green chemistry to new cancer therapies and imaging techniques is just one example of his innovative and entrepreneurial leadership that has forged new directions in science," said NSF Director Arden L. Bement.

DeSimone and his team are currently utilizing fabrication processes from the microelectronics industry to create nanocarriers in medicine. DeSimone's PRINT<sup>®</sup> (Particle Replication in Non-wetting Templates) technology can, for the first time, manufacture highly customizable and controllable nanobiomaterials for the diagnosis and treatment of disease, with promising applications in biotechnology and pharmaceuticals.

Understanding that invention needs to be brought out of the laboratory and into the market to have a societal impact, DeSimone helped form [Liquidia Technologies](#) to commercialize the PRINT technology. He is also the co-principal investigator for the Carolina Center for Cancer Nanotechnology Excellence, which concentrates on projects using PRINT in oncology and is part of the [National Cancer Institute \(NCI\) Alliance for Nanotechnology in Cancer](#).

### **Innovation: Where Diversity and Creativity Meet**

The Lemelson-MIT Prize also recognizes DeSimone's strong commitment to mentorship. To date, DeSimone has mentored more than 130 students and research associates, continuously emphasizing diversity of thought and creativity as the cornerstones of all successful endeavors.

"The ability to cross-germinate ideas from different areas to produce innovative solutions is invaluable to an inventor," said Joshua Schuler, executive director of the Lemelson-MIT Program. "DeSimone's ability to creatively fuse concepts across disciplines, coupled with his dedication to fostering the inventive spirit, uniquely position him to improve our world through invention and innovation."

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### **ABOUT THE LEMELSON-MIT PROGRAM**

The Lemelson-MIT Program recognizes outstanding inventors, encourages sustainable new solutions to real-world problems, and enables and inspires young people to pursue creative lives and careers through invention.

Jerome H. Lemelson, one of U.S. history's most prolific inventors, and his wife Dorothy founded the Lemelson-MIT Program at the Massachusetts Institute of Technology in 1994. It is funded by the Lemelson Foundation, a philanthropy that celebrates and supports inventors and entrepreneurs in order to strengthen social and economic life in the U.S. and developing countries. <http://web.mit.edu/invent/>