



Michael Greenman

The Odd Couple

GMIC's Strength of Glass contest completed its one-year span May 1, 2007; we will announce the winners in July at ICG in Strasbourg, France. The possibility of developing glass with a tensile strength 50 times its current specification is extremely attractive.

Meanwhile, another avenue to developing new attributes and applications for glass is being addressed in a purposeful manner with the encouragement of GMIC and its members. Glass artists and glass scientists are being brought together to exchange ideas and practices for the potential benefit of both.

Methods developed by glass artists to produce new visual effects have been studied and adopted by glass scientists. For example, the ancient process for making complex patterns in glass known as "millefiori" was adapted in the last century to create optical fibers. "Opalized" glass, blown from phosphorus-calcium-silica glass, has evolved into bioactive glass for human bone replacements.

These and other processes evolved almost by chance—a scientist in close proximity to an artist observing a characteristic and making a leap to a possible commercial application. This two-way street also resulted in the adoption of the use of lasers to create special effects in art glass.

In November 2004, GMIC organized

a visit by several glass artists and glass scientists to Corning Inc.'s Sullivan Park Technical Center and to Alfred University. We visited research laboratories and heard from leading glass theorists. At Alfred, we observed artists creating works of art using casting, sol-gel and neon lighting.

Most interesting was an exchange between a glass artist and a scientist describing a piece of glass art and an optical fiber preform blank. Both experienced insights from the other's object and description. Observers had their own revelations. Now, a number of institutions are exploring the possible benefits of glass art-science exchanges.

Exchanges Make Progress

Antonio Pires de Matos, professor at New University of Lisbon, Portugal, is working toward an agreement with companies, communities, technical schools and the government to cooperate in education and to develop new ideas in glass art, or glass with nonconventional properties that the industry can use.

Carlo Pantano, professor at The Pennsylvania State University, runs a course entitled "The Art and Science of Glass" that brings together students from the Materials Science & Engineering Dept. and the School of Visual Arts. "One goal is to blur the lines between the arts and science in order to shape more creative engineers and more analytical artists," he said.

Pantano and his students are involved in Friday night events in the Lehigh Valley called the Glass Trail. They provide scientific lectures at locations where glassblowing or flameworking or kiln forming is ongoing.

Alfred University, with its focus on both the science and the art of glass, is looking at the possibility of glass science/glass art collaborations, with plans for a degree program that combines art and science.

Is this an idea whose time has come in the United States? Perhaps not!

U.K. vs. U.S. Approach

The United Kingdom has introduced a major government program to encourage creativity in manufacturing and business. In the U.K.'s *Manufacturing & Technology News* (July 8, 2005), "U.K. Leads, U.S. Lags," Kenan Patrick Jarboe, president of Athena Alliance, Washington, stated: "The U.K. is seeking a position of leadership in post-industrial manufacturing."

The program calls for a "package of measures aimed at increasing the contribution of creativity to productivity growth." The budget proposed a comprehensive review of how small and medium-size businesses might improve creativity, as well as funding for a new design center.

"The government is signaling that it understands that the country's economy will rise or fall on how well it utilizes its creative talents in all sectors of the economy, especially manufacturing," said Jarboe.

Where is the United States in the process? "The President's proposed budget for FY 2006 almost eliminated the Manufacturing Extension Partnership... and flatlined nonmilitary R&D spending.

"Moreover, while the private-sector gets it—as evidenced by the newly created Stanford Institute of Design—the link between manufacturing and creativity is an unknown concept in Washington," according to Jarboe.

So, it appears that collaboration between art and science is up to farsighted organizations and individuals who recognize that there are potential benefits. A start has been made within the glass industry. Where will we go with it?

PS: Anyone interested in reviewing the November 2004 presentations and reports can request the CD from GMIC.

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