

Engineering dean participates in Buffalo Billions initiative

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Doreen Edwards, dean of the Kazuo Inamori School of Engineering at Alfred University, is among a panel of experts helping to redefine the future of manufacturing in Western New York. Providing the impetus is the “Buffalo Billion” initiative launched by New York State Gov. Andrew Cuomo to revitalize the economy of the Buffalo Metro area, and the region in which it is located.

In taking stock of existing manufacturers in the region, and looking at the types of companies that might be drawn to the area, those that use ceramics and other advanced materials as an enabling technology quickly came to the forefront. Existing manufacturers include those that use optical ceramics, electro-ceramics, bioceramics, and those that rely on ceramics for renewable energy technologies.

What also came to the attention of the Buffalo Niagara Advanced Manufacturing Institute - Implementation Working Group was Alfred University’s expertise in the development and production of ceramics and other advanced materials. “Alfred University is recognized as the premier ceramic engineering education institution in the nation,” Edwards said, and AU graduates “are ubiquitous throughout the industry.”

While the graduates of the biomaterials engineering, ceramic engineering, glass science engineering, and materials science programs are well-known within the materials community, graduates of AU’s programs in mechanical engineering are also finding jobs in the materials-based industries, said Edwards. Alfred University’s mechanical engineers are “ideal candidates for ceramic and glass manufacturing positions because of the connections they’ve made during their time at Alfred. Over the next few years, we will be strengthening this connection by developing an interdisciplinary capstone course where teams of students from many different engineering disciplines can collaborate to solve design and manufacturing problems.”

Hiring several new faculty has allowed the Inamori School of Engineering to expand its expertise in new areas critical to materials-based companies: rapid prototyping and the characterization and manufacturing of new materials, particularly “ultra-high temperature ceramics,” said Edwards.

Alfred University brings other assets to the table as well.

One is the Center for Advanced Ceramic Technology, created more than 20 years ago to provide a range of services, from analytical services to short- and long-term proprietary research projects, all designed to help materials industries in New York State retain and create jobs. The CACT is funded by NYSTAR, Empire State Development Corporation’s Division of Science, Technology and Innovation. Current director is Matt Hall, associate professor of biomaterials and glass science. Deputy director is Barry Watkins. (Insert contact information)

A second asset is the Center for High-Temperature Characterization (CHTC). Created with New York State funding, the Center provides analytical services and user access to equipment for measuring materials properties at high temperature and controlled atmospheric conditions. Suites of equipment are available for measuring the thermal, mechanical, electrical and optical properties of materials and systems. For phase and structural characterization, Alfred University has one of the best-equipped X-ray diffraction laboratories of any university in the nation. Alfred’s x-ray lab houses eight instruments, including two custom-built in-situ instruments with high-temperature chambers and position-sensitive detectors used for phase equilibria and kinetics studies. Hot-state microscopy and high-temperature scanning electron microscopy is also available.

