

Alumnus/founder of Robocasting to deliver McMahon Lecture: '3D Printing of Ceramics'

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Dr. Joseph Cesarano III

Dr. Joseph Cesarano III, an Alfred University (AU) alumnus who is president and founder of Robocasting Enterprises, LLC, will deliver the 2014 John F. McMahon Lecture at 11:20 a.m. Thursday, Nov. 20, in Harder Hall auditorium on the AU campus. The event is open to the public free of charge.

The annual invited lecture is sponsored by AU&s Kazuo Inamori School of Engineering and was established to honor the memory of Dr. John F. McMahon, Alfred University alumnus, faculty member, and dean of the College of Ceramics.

Cesarano&s talk “3-D Printing of Ceramics via Robocasting” will include a review of the robocasting 3-D printing technique, a discussion on the colloidal particle behavior and manipulation utilized in robocasting as well as a commercial perspective in the field.

Robocasting, Cesarano explains is “The automated micro-extrusion of concentrated fine-particulate pastes that can transition from a yield-pseudoplastic rheology to a dilatant, solid-like state upon deposition” He says that robocasting is particularly suitable for commercial-scale manufacturing of porous lattice structures and custom labware.

The John F. McMahon Lecture was created in 1980 by AU alumni to honor Dr. McMahon for his contributions to ceramic science and engineering. Each year, a distinguished ceramic scientist or engineer delivers the lecture and receives the John F. McMahon Award.

McMahon promoted relationships between industry and academia and advanced the education of ceramic engineers and artists during his tenure as dean of the College of Ceramics at Alfred University from 1949-65. He led the college to consider the vital needs of the industry while maintaining a strong academic tradition of basic fundamental research and education. Long before others seriously considered ceramic materials for automobiles, McMahon explored the idea with General Motors.

Cesarano received a Bachelor of Science degree, *summa cum laude*, in ceramic engineering from Alfred University in 1983; a master's in ceramic engineering and a Ph.D. degree in materials science from the University of Washington in 1985 and 1989 respectively. He has been a visiting scientist at Oak Ridge National Labs and the Swedish Ceramic Institute. From 1989-2007 he was a scientist with Sandia National Laboratories and served as an adjunct professor in the Department of Chemical and Nuclear Engineering at New Mexico Tech.

At Sandia, he specialized in colloidal science and manipulation of fine particles for the development of material manufacturing technologies and process improvement. He has mentored over 50 students, several of whom are now university professors. He is an inventor of robocasting technology, has eight patents, three patents pending, and is an author on more than 30 technical papers. His publications on polyelectrolyte stabilization of ceramic particles are used in materials science curriculums world-wide and have been cited over 660 times.

In February 2007, Dr. Cesarano took an entrepreneurial leave from Sandia and began full-time operational control of Robocasting Enterprises LLC where he is currently president. He and his wife Martha are the parents of a son Brad and a daughter Anna.