

# Discoveries in Nanoscience at MU Lead to Opening of Unique On-Campus Nanoparticles Production Core Facility

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A tiny particle undetectable by the human eye is at the center of future research and discovery in science, technology and medicine. Experts, including a national academy of sciences member, have commented that the University of Missouri-Columbia is ten years ahead of the curve, due to discoveries made in the field of nanoscience by Kattesh Katti, professor of radiology and biomedical physics and Raghuraman Kannan, research assistant professor of radiology. These discoveries paved the way for the recent opening of the Nanoparticle Production Core Facility (NPCF), one of the first on-campus facilities of its kind.

"One can use other processes but what we have developed is superior to any process out there," Katti said. "We already are seeing the results of setting up such a facility. Development of a number of new nanoscience research projects and submission of several research grants were possible because of the availability of nanoparticles that would not have been possible without this resource."

The NPCF will produce a reliable and continuous supply of metallic nanoparticles to help researchers pursue cutting edge research in nanoscience, nanotechnology and nanomedicine. The center has been able to facilitate research in cancer imaging and therapy that depends on direct applications of metallic nanoparticles, Katti said. The nanoparticles are provided to radiologists, biologists, physicists and engineers. The availability of nanoparticles is a unique resource because

in many cases certain types may not be commercially available or cannot be shipped. The on-campus facility provides an endless supply of gold and silver nanoparticles in various sizes or customized to a researcher's specification, Kannan said.

Metallic nanoparticles are made especially for medical applications in a patented process. Research is underway at MU to use these nanoparticles to detect cancer, even at a pre-cancerous stage through medical imaging techniques. MU experts from several fields, including radiology, biochemistry, veterinary sciences, biomedical engineering and physics, are working together to use the tiny nanoparticles to treat cancer at the molecular level.

"This production facility is a unique resource for MU and the state of Missouri moving both forward into the field of nanomedicine," Katti said. "A \$5 million grant recently was submitted to the National Institute of Health to establish a major multi-faculty cancer and nanotechnology platform at MU."

"Dr. Katti and Dr. Kannan are very forward-thinking scientists and their research has moved MU to the front of the line in the area of nanomedicine," said Radiology Department Chair Robert Churchill. "Their basic science research is of the highest quality and the results of their research provide the foundation for the development of new and innovative ways to image certain types of cancer and to ultimately treat cancer."

According to Katti, the NPCF is serving as an important hub to provide formal education and training in nanoscience and nanotechnology to MU's undergraduate and graduate students to shape the future of major nanotechnological scientific developments related to human health and hygiene.

"We are really proud and excited by the cutting-edge research that Dr. Katti and his group are doing in the field of nanomedicine," said Vice Provost for Research James Coleman. "The Nanoparticles Production Core Facility is a centerpiece of that work and also in our plans to build one of the best nanomedicine programs in the world."

Source: University of Missouri

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