

MU scientists go green with gold, distribute environmentally friendly nanoparticles

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Gold nanoparticles are everywhere. They are used in cancer treatments, automobile sensors, cell phones, blood sugar monitors and hydrogen gas production. However, until recently, scientists couldn't create the nanoparticles without producing synthetic chemicals that had negative impacts on the environment. A new method, created by a University of Missouri research team, not only eliminates any negative environmental impact, but also has resulted in national and international recognition for the lead scientist. The research was published recently in the journal *Small*.

"I have always believed that nature is smarter and stronger than humankind," said Kattesh Katti, professor of radiology and physics in MU's School of Medicine and College of Arts and Science, senior research scientist at the MU Research Reactor, and director of the MU Cancer Nanotechnology Platform. "This new procedure to create nanoparticles is wonderfully simple, yet it will help create very complex components. There is so much to learn from energy generation, chemical and photochemical reactions of plants."

Katti, who was recently recognized by *rt Image* magazine as one of the 25 most influential people in radiology, and his research team have formed Greennano Company, a company that is in the beginning stages of producing environmentally friendly gold nanoparticles. The company will focus on the development, commercialization and worldwide supply of gold nanoparticles for medical and technological applications. Katti believes that because of this new process to produce the nanoparticles,

researchers are developing other ways to use them.

The MU research team, which was led by Katti, Raghuraman Kannan and Kavita Katti, found that by submersing gold salts in water and then adding soybeans, gold nanoparticles were generated. The water pulls a phytochemical out of the soybean that is effective in reducing the gold to nanoparticles. A second phytochemical from the soybean, also pulled out by the water, interacts with the nanoparticles to stabilize them and keep them from fusing with the particles nearby. This process creates nanoparticles that are uniform in size in a 100-percent green process. No toxic waste is generated.

"I'm very proud to be one among the list of '25 Most Influential Scientists' in the world, especially in the company of all time greats and former awardees including: Elias Zerhouni, director of National Institutes of Health (2003); Henry N. Wagner Jr., recognized as the Father of Nuclear Medicine (2004); Henry D. Royal, Peter S. Conti, past presidents of the Society of Nuclear Medicine; and Barry B. Goldberg, pioneer of ultrasound (2007)," Katti said. "This recognition is a tremendous honor and brings a large amount of prestige to our research group, the Departments of Radiology and Physics, the MU Research Reactor Center and the overall research and education enterprise of our University."

"They all had one thing in common; they possessed the integrity, drive and passion deserving of the title 'Most Influential,'" said Heather B. Koitzsch, publisher of rt Image. "In this year's list, you'll read about people who are changing the face of medicine, associations that are advocating for better patient care, and researchers whose efforts are uncovering new diagnostic techniques. Whether through speaking, campaigning, researching, creating or leading, someone who is "Most Influential" is committed to making things happen in radiology."

Source: University of Missouri-Columbia

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