

*Invited Presentation***BIOMEDICAL ENGINEERING SEMINAR**

11:00 a.m.-12:00 noon, Friday, March 20, 2009
Mann Hall, Medical Sciences Building

Title: Green Nanotechnology In Nanomedicine and Technology

**Presenter: Kattesh V. Katti, M.Sc.Ed, Ph.D., FRSC
Director, University of Missouri
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Abstract: Nanoparticles are used in a myriad of applications from renewable energy, medical imaging, cancer therapy, in the design of smart materials, fast computers, heat transfer agents and as environmental restoration agents. As the nanotechnology revolution continues to unfold to unleash its power on our day to day lives, the environmental impacts of various nanotechnological production processes and finished products that are embedded with a wide spectrum of nanoparticles must be addressed right at the time of inception of this emerging technology. There is spawning fundamental and mission oriented research, in both academia and industry globally, toward applications of 100% 'Green' nanotechnologies for the design and development of nanoparticles which in turn make their way into the design and development of smart electronic materials, life saving nanopharmaceuticals, environmental restoration technologies and in alternate green energy production devices. The sound economic models for hefty profits for the industrial corporations and their ability to perpetuate future Green nanotechnologies have created great niche for policy makers for future industrial and technological expansions. Green Nanotechnology is an interdisciplinary rapidly developing knowledge base at the interface of chemistry, physics, engineering and biological fields. Environmentally benign 'Green' nanotechnological processes are being developed to give the global corporate sectors the ability to design new products that are made from more eco - friendly materials including plants, crops, various phytochemicals and phytoconstructs, using processes that use less energy and generate less waste throughout the product lifecycle. This presentation will encompass description of latest discoveries from the speaker's laboratories on the production of gold nanoparticles without the intervention of any 'Man Made' chemicals [1-4]. This lecture will cover: gold nanoparticles produced via phytochemicals, present in Soy and various plant origins, and the applications of 100% 'Green' gold nanoparticles and green nanotechnologies in the design and development of new medical diagnostic/therapeutic agents. Development of prostate/breast tumor-specific gold nanoparticles and their applications in the early detection of specific tumors via molecular imaging techniques will be discussed.

1. <http://www.nanoscienceworks.org/articles/breakthroughs-in-nanotechnology-on-edge-of-2018knowledge-frontier2019>
2. <http://www.azonano.com/news.asp?newsID=5230>
3. Vijaya Kattumuri, Kavita Katti, Raghuraman Kannan and Kattesh V. Katti, et.al; Naturally Occuring Gum Arabic as a Phyto Construct for the Stabilization of Gold Nanoparticles: In Vivo Pharmacokinetics and X-ray Contrast Imaging Studies, *Small*, 2, 333 2007
4. Kattesh V. Katti, Raghuraman Kannan, Ravi Shukla, Kavita Katti, Nripin Chanda; Soybeans As A Phytochemical Reservoir For The Production Of Green nanoparticles; *Small* (2008, in press)

Host: Priyo Mukherjee, Ph.D.

◆ See BME web page for list of speakers:

http://mayoresearch.mayo.edu/mayo/research/physio_bme/2009_bme_seminars.cfm