

Department of Physics & Astronomy

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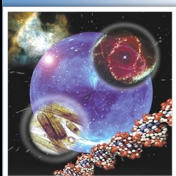
Friday, September 23, 2011

Time: 3:00 p.m.-4:00 p.m.

BB 3.04.18

Regenerative Antioxdant Cerium Oxide Nanoparticles

Reactive oxygen and nitrogen species play a critical role in many degenerative diseases. Nanomaterials, especially modified fullerenes and cerium oxide nanoparticles, have been shown to effectively protect mammalian cells against damage caused by increased reactive oxygen or nitrogen species, and has been shown to act as effective superoxide dismutase mimetic in vitro. The redox ability of rare earth oxides (ceria, lanthanides, etc) has been used in a wide range of applications such as three way catalysis, oxygen buffer systems, sensors and corrosion prevention. While these nanostructures have been widely used in many inorganic applications, their role in biology as catalyst is not explored fully. This presentation will provide a brief overview of the applications of nanoceria in treatment of disorders caused by ROS. The role of size and stability has also been explored. For various practical applications, synthesis of biocompatible and stable suspensions of nanoceria is essential. It was found that the redox kinetics of regenerative ceria nanoparticles can be controlled with the type of medium and their implications in nanobiomedicine is presented. (Funding: National Science Foundation NIRT, National Institute of Health RO1)



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