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Nano-Coating of Silicon Oxynitride on Titania Nanotubes and its use in Sensors at Ambient Temperature

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Our work is centered on metal oxide nanotubes and i will present our work on Titania nanotubes, TiNT, synthesized by the anodic oxidation of Titanium. We have made several metal ions derivatives by reacting freshly prepared TiNT with up to 60% hydroxyl groups with differing amount of metal acetates. Zinc ion substituted TiNT, TiNT-Zn for example complexes with peroxide explosives such as Triacetone triperoxide, TATP resulting in a drastic change in electric conductance of the nanotubes which has been utilized in designing a solid state nanotube sensor. To overcome the reaction of water and saline vapor, we developed Nano coating of silicon oxynitride on TiNT-Zn. We have also studied the depth profile of Zn in the nanotube by Nano-SIM.

Biography:

Dr. Indu B Mishra has a Ph.D in Chemistry and Engineering from the University of Southern California. His graduate dissertation was Chemistry of Pentaborane under the guidance of late Professor Anton B Burg. Over the years he has worked on separation of uranium from vanadium, organotin compounds and metallocarboranes as combustion catalysts, polymers as fuels for solid propellants, azides and tetrazoles as inflators for airbags culminating in study of metal oxide nanotubes. Dr. Mishra has been a professor in India, Brazil and Howard & Johns Hopkins universities in the USA. He has worked in private industry as a research scientist for Talley industries of Arizona and Olin Corporation.