

## Thermal cyclic life of glass-ceramic bonded thermal barrier coating system

Sumana Ghosh

PhD, CSIR-CGCRI, India

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### Abstract

During the last ten years, the design of new enzyme-free electrochemical sensors based metal oxide nanoparticles has been described. Due to the electrocatalytic activity of these nanomaterials, these sensors allow the sensitive detection of different ions and molecules. They can replace advantageously enzymes due to their higher stability.

The presentation will be focused on the use of Kegging type polyoxometallates (POMs) for the detection of nitrite ions<sup>1</sup> and of hydrogen peroxide. The association of POMs with single-wall carbon nanotubes (image) allowed the increase of the sensitivity of detection of hydrogen peroxide by a factor of 38.52. The involved charge transfer mechanism will be detailed.

Other types of metal oxide nanomaterials such as perovskites will also be presented.  $A_2B_04+\delta$  type perovskite are alternance of perovskite  $ABO_3$  and of rock salt  $AO$  layers, A being a lanthanide and B a metal. Detection limit of glucose is  $0.5 \mu\text{M}$  and no interference of detection is observed in human serum. The involved charge transfer mechanism will be detailed.

This presentation shows the potentiality of metal oxide nanomaterials for biosensing.

### Biography:

Dr. Sumana Ghosh has completed B.E. from IEST, Shibpur and M.Tech. from IIT, Kharagpur. She has got Ph.D. degree from Jadavpur University, Kolkata. Currently, she is the Principal Scientist of CSIR-Central Glass and Ceramic Research Institute (CSIR-CGCRI), a premier research organization in India. She is working in the field of coating, joining and microwave processing of materials. She has published 45 papers in reputed journals. She has published 55 papers in national and international conference proceedings/ book of abstracts. She has 5 Indian patents and 7 book chapters. She has presented 9 lectures as invited speaker. She is a reviewer of some SCI journals..