International Conference & Exihibition on
Analytical and Bioanalytical Techniques 2010
ANANBIOANAL - 2010
Pharmaceutical R & D Summit
doi:10.4172/2155-9872.1000087

Nano-Structured and Atomic Cluster Materials in Trace and Ultratrace Analysis of Bio- and Envirotoxic Markers

T. Prasada Rao

Scientist G, Chemical Sciences & Technology Division, National Institute for Interdisciplinary Science & Technology (NIIST)-CSIR, Trivandrum, India.

The selection of appropriate analytical technique for detection and quantification of ultra trace amounts of bio- and envirotoxic markers depends on primary criteria such as sensitivity, selectivity, precision and accuracy in addition to auxiliary criteria like availability, cost of equipment, time of analysis, sampling and standards requirements. Various singular and hyphenated techniques have been developed over the years which include spectral, electrochemical, radiochemical, X-ray and mass spectrometric. In spite of such significant advances in analytical instrumentation, analytical chemists often resort to either off-line or on-line pre-concentration to reliably quantify bio- and envirotoxic markers present in complex matrix and several other analogous co-existing species.The invited talk consists of 2 parts namely gold atomic clusters and nano-structured molecularly imprinted polymer materials for ultra trace detection and quantification of biomarkers(Cysteine and Tyrosine) and envirotoxic markers(Uranium). In addition, the electrocatalytic red-ox behaviour of atomic cluster scaffolds and functional nano-material modified gold/glassy carbon electrodes will be described. Furthermore, the synthesis and characterization of surface imprinted nano-spheres for pre-concentrative separation of uranium and successful utilization of these materials for harnessing or decontamination of uranium from various natural water simulants including SAMBHAR SALT LAKE will be touched upon.