

# 5<sup>th</sup> International Conference and Exhibition on Analytical & Bioanalytical Techniques

August 18-20, 2014 DoubleTree by Hilton Beijing, China

## *In vitro* detection of clinical biomolecules: Novel carbon-nanosheet and aptamer as recognition elements

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In medical diagnostics, detections of clinically important molecules are extremely important. In this regard, in recent year's nanobiosensor technology is proven to be one of the most powerful detection systems. In this talk, the biosensor technology and its real clinical implication in diagnostics will be introduced. A new class of carbon material, carbon nanosheets (CNS), is a multi-layered graphene film which possesses exceptional thermal conductivity, electrical conductivity, surface-to-volume ratio, thin edges, and lightness with higher efficacy compared to graphene. This CNS was hydrothermally reduced (r-CNS) and electrophoretically deposited on to the gold nanoparticles coated electrode surface applied for the detection a neurotransmitter in neuronal cell lines. The developed sensor was characterized by Raman spectroscopy, Fourier transform infrared spectroscopy, and X-Ray photoelectron spectroscopy. This r-CNS based system showed high response and electrocatalytic activity toward the neurotransmitter detection. To prove the electrocatalytic activity other molecules were also tested. In another example, a sensitive and selective electrochemical biosensor will be discussed for the *in vitro* determination of chloramphenicol (CAP) using *Haemophilus influenza* as a model culture. This sensor differentiates between drug resistant as well as drug sensitive bacterial isolates very well in quick time. These results are of direct clinical values and can be extended further for quick screening of CAP resistant microbial species.

### Biography

Pranjal Chandra earned his PhD degree from Pusan National University, South Korea. Currently he is Assistant Professor at Amity Institute of Biotechnology, Amity University Uttar Pradesh, India. He has published more than 25 research articles and serve as an editorial board member of ten reputed international journals such as; Journal of Biosensors and Bioelectronics, *Journal of Analytical & Bioanalytical Techniques*, *Journal of Molecular Biomarkers & Diagnosis*, *Journal of Bioanalysis & Biomedicine*, *Journal of Medical Microbiology & Diagnosis*, *Journal of Biotechnology Letters* etc. He is interested to combine biotechnology, nanotechnology and electroanalytical chemistry approaches to address the problems of biomedical significance and diagnostics.

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