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Application of nanostructured materials and polymer composite modified electrodes for electrochemical determination of drugs and biomolecules

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We have developed a novel biocomposite material for the electrocatalysis of p-acetamidophenol using Multi-walled carbon nanotubes (MWCNTs) and poly (aniline) and poly (flavin adenine dinucleotide) copolymer (PANIFAD) at gold electrode and screen printed carbon electrodes (SPCE). The developed MWCNTs-PANIFAD biocomposite film for the electrocatalysis combines the advantages of ease of fabrication, high reproducibility and sufficient long-term stability. In another approach we have fabricated metal hexacyanoferratesconducting polymer film based sensor for the simultaneous determination of p-acetamidophenol and ascorbic acid. We proposed easy and convenient method for the detection and determination of melamine by employing oxidized polycrystalline gold electrode (poly GE). The poly GE successfully detects the melamine signal (0.06-0.85 ppm) in tainted milk powder samples. It also exhibited two well-separated anodic oxidation peaks for urine and melamine in melaminespiked human urine samples with high sensitivity. We used simple preanodized SPCE for the electrochemical detection of a hypnotic agent propofol. The preanodized SPCE is found to be much effective for the detection of propofol in physiological pH conditions. Furthermore, the proposed SPCE overcomes the interference effects and effectively shows the oxidation peaks for the detection of propofol in urine samples. Nano TiO2 -conducting polymer, poly(3,4ethylenedioxythiophene) (PEDOT) composite modified electrodes for the detection of Diclofenac which is an essential anti-inflammatory drug to reduce inflammation.

## Biography

Dr. Shen-Ming Chen received his Bachelor Degree in Chemistry in 1980 from National Kaohsiung Normal University, Taiwan. He received his Master Degree (1983) and Ph.D. Degree (1991) in Chemistry from National Taiwan University, Taiwan. He is currently a professor at the Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, Taiwan. His current research interests include electroanalytical chemistry, bioelectrochemistry, fabrication of energy conservation and storage devices and nanomaterial synthesis for electrochemical applications. He has published more than 200 research articles in SCI journals.