

Nanostructured platform based on polyaniline/cellulose nanocrystal composite for biosensor application

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The nanocomposite of Polyaniline/Cellulose nanocrystal (PANI/CNC) was synthesized via in situ chemical polymerization of aniline in the presence of CNC using ammonium peroxydisulfate (APS) as the oxidant. SEM images showed nanostructure of composite with no phase separation revealed homogenous polymerization of monomer in the presence of cellulose nanowhiskers. Aggregation of PANI particles was observed with increasing aniline concentration. The formation of PANI/CNC nanocomposite on SPE electrode followed by the deposition of a thin layer of ion liquid (IL), [BMIM][Cl], film have combined the unique properties of the individual materials and showed synergy effect of CNC/IL on electrocatalytic properties of nanocomposite for electrochemical biosensor application. The higher anodic/cathodic current for PANI/CNC/IL/SPE modified electrode compare to PANI/SPE electrode showed important rule of CNC and IL in accelerating the electron transfer between polymer and the electrode. Application of PANI/CNC nanocomposite modified electrode for cholesterol detection was investigated.

Biography

Mahnaz M Abdi received her PhD in Material Chemistry from Universiti Putra Malaysia, 2010. She was with Institute of Tropical Forestry and Forest Products, UPM as a Post-doctoral fellow and continued her career as a researcher at the Luleå University of Technology (LTU), Lulea, Sweden. She currently works as senior lecturer/research associate at Universiti Putra Malaysia. Her research focused on nanocomposite materials from conducting polymers/biopolymers and their application in sensors, biosensors, and corrosion protection.

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