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Glassy carbon electrode modified with polyaniline/ethylenediamine for detection of copper ions

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Increasing water pollution is having high concern, since it creates the threats to all leaving organisms of existence. Industrial sewages have not only polluted the main stream lines of water, also the ground level water is having serious contaminations. Heavy metal ions are the pollutants which are not degradable and can be accumulated on living things ultimately the excess accumulation results into the serious concerns. Therefore, it is necessary to develop the sensors which can detect the heavy metal ions up to its maximum contamination limits. Conducting polymers are the materials which possess large application spectra. This investigation reports the electrochemically synthesized polyaniline (PANI) for modification of glassy carbon electrode (GCE). Ethylenediamine (EDA) – chelating ligand used for the modification of polyaniline so as to inculcate the selectivity toward copper ions Cu (II). The electrochemical cyclic voltammetry (CV) was used for the study of redox characteristics of PANI and influence of EDA modification. The result of CV has shown the reduced oxidation and reduction peak currents after modification indicating the domination of EDA. GCE modified with PANI/EDA was then employed for the detection of divalent copper ions and have shown the affinity toward Cu ions. The detection limit achieved was equal to 10mg/lit.

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