## ABSTRACT OF THE DISCLOSURE

## POLYMER/NANOPARTICLE COMPOSITES, FILM AND MOLECULAR DETECTION DEVICE

**[0075]** A molecular detection device for use in electrochemical detection assays includes at least two electrodes, and has a film deposited on at least one of the electrodes. The film includes a conductive polymer and conductive particles, having mean diameters between 1 and 100 nm, within the conductive polymer. Probe molecules may be attached on or to the conductive polymer, or be included in the conductive polymer. The device may be used to detect specific target molecules in a sample, for example, protein, peptide, nucleic acid or small molecule target molecules.

Figure 1A