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(71) Applicant (for all designated States except US):
AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH [SG/SG]; 20 Biopolis Way #07-01, Centros, Singapore 138668 (SG).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **GAO, Zhiqiang** [SG/SG]; c/o Institute of Microelectronics, 11 Science Park Road, Singapore Science Park II, Singapore 17685 (SG).

(74) Agent: **SCHIWECK, Wolfram**; Viering, Jentschura & Partner, P.O. Box 1088, Rochor Post Office, Rochor Road, Singapore 911833 (SG).

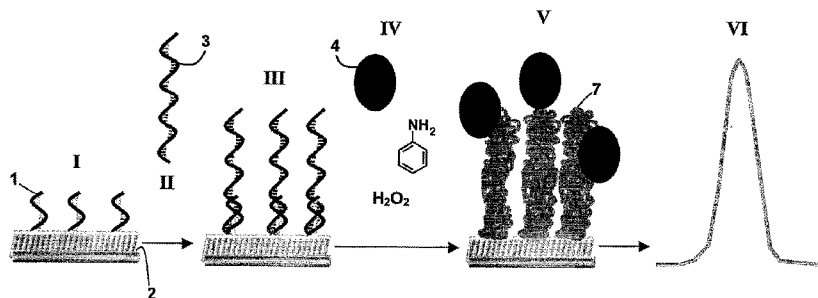
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(54) Title: METHODS FOR ELECTROCHEMICAL DETECTION/QUANTIFICATION OF A NUCLEIC ACID



(57) Abstract: The invention provides methods and kits for the electrochemical detection and/or quantification of a target nucleic acid molecule by means of a detection electrode. In one method there is immobilized on the detection electrode a peptide nucleic acid (PNA) capture molecule, which has a nucleotide sequence that is at least partially complementary to at least a portion of the target nucleic acid molecule. The electrode is contacted with a solution expected to include the target nucleic acid molecule and the target nucleic acid molecule allowed to hybridize to the PNA, thereby allowing the formation of a complex between the PNA capture molecule and the target nucleic acid molecule. A polymerisable positively chargeable precursor is added, which associates to the complex formed between the PNA capture molecule and the target nucleic acid molecule. A suitable reactant molecule is added, initiating the polymerisation of the polymerisable positively chargeable precursor and the formation of an electroconductive polymer. An electrochemical measurement at the detection electrode is performed. In another method a nucleic acid capture molecule is immobilized on the electrode. In this method a polymerisable positively chargeable precursor, a suitable substrate molecule, and an enzyme attached to a detection probe nucleic acid molecule are used. The detection probe nucleic acid molecule is at least partially complementary to at least a portion of the target nucleic acid molecule. The detection probe hybridizes to a portion of the target nucleic acid that is different from the portion to which the capture nucleic acid molecule hybridises.