Cheeshin Technology Co. Collaboration

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Rapid and ultrasensitive flexible palladium nano-thin film biosensing electrode development for cancer antigen HER2 detection YUN-TZU HUANG, CHIA-YU CHANG, WEI CHEN, Natl Chiao Tung Univ, CHIEN-HAO SU, GUO-CHENG HSU, Cheeshin Technology Co, CHIA-CHING CHANG, Natl Chiao Tung Univ, Institute of Physics, Academia Sinica — HER2 (human epidermal growth factor receptor 2) is one of the significant surface antigens of breast cancer Trace amount of HER2 protein in human serum is highly correlated to the tumor progression in breast cancers especially in the cases of recurrence. Therefore, HER2 detection of human serum is significant for early detection of cancer recurrence. Conventional HER2 detection approaches may not be sensitive enough or contain highly false positive rate or time consuming for accurate detection. Therefore, a rapid, highly sensitive and specific sensing is highly desired. By using HER2 specific binding peptide functionalized palladium thin film electrochemical electrode the HER2 protein concentration can be determined at subnanogram level by electrochemical impedance spectroscopy (EIS) within 10 mins. The Pd nano-film is sputtered on the flexible plastics substrate and reduces the cost of this electrode. Due to the low cost of the electrode, it is designed as a disposable biosensing probe which may reduce the concern of human sample contamination. The self-management after breast cancer operation may be feasible in the near future.

Keywords: Electrochemical impedance spectroscopy(EIS), breast cancer, biosensor

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