

Nanobiochip for ultrasensitive detection of Prostate Cancer based on electrical detection using Scanning Tunneling Microscope

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Prostate Specific Antigen (PSA) is a marker for prostate cancer and it has been identified as a potential marker for breast cancer in women. For the early diagnosis of the prostate cancer and the breast cancer, an ultrasensitive detection system for PSA is being required. In this study, novel ultrasensitive PSA detection method by Scanning Tunneling Microscopy (STM) using gold (Au) nanoparticle-antibody conjugate was developed. As a result, the frequency of current peaks was generated in accordance with the surface density of the dispersed Au nanoparticle on the surface, which was represented as periodogram with its logarithmic regression curve. And, the change of the power spectrum was observed in accordance with the concentration of PSA molecule.

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