



## WC 2006

**World Congress on Medical Physics and Biomedical Engineering** 

Aug. 27 - Sep. 1, 2006 COEX Seoul, Korea

"Imaging the Future Medicine"

The Triennial World Congress of IUPESM

The 15th ICMP of IOMP The 21st ICMBE of IFMBE

www.wc2006-seoul.org



Hosted by





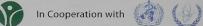




























**T2 Poster Session** 

**Exhibition Hall** 

Presenting Time: 10:30 - 11:00 / 14:10 - 14:40

1120. Gene Annotation Using Mass Spectrometric Data Yoko Ishino, Hisaaki Taniguchi

2121. Virtual Eye – A Human Visual System Modeller and Simulator

<u>Rodrigo Duran,</u> Luis Nonato, Odemir Martinez, Liliane Ventura

2122. Hybrid Elastic Network Model for The Study of Conformational Diseases

Yunho Jang, Moon Kim

2123. Mathematical Modeling of G2/M Phase in the Cell Cycle with Involving the p53/Mdm2 Oscillation System

<u>Yoshihiko Tashima</u>, Yu Kisaka, Taizo Hanai, Hiroyuki Hamada, Yukihiro Eguchi, Masahiro Okamoto

2124. Physiograph: Record and Analysis of Synchronic Physiological and Behavioral Variables

Juliano Leite, P. Giassi, C.N. Pederiva, M.A. Sovierzoski, J. Marino Neto

2125. Resonance Restriction Technique for the Resolution-Based Retrieval of Palindrome in Escherichia Coli Genome Sequence

Ruo Ando, Yashiyasu Takefuji

2126. Using the Principal Component Analysis Method to Study the Codon Usage Preference of RNA Viruses Hsiu Man Lin, Ming-Wei Su, Hanna S. Yuan, Woei C. Chu

2127. Thermo-Effects of Methionine Aminopeptidase: Molecular Dynamics Studies

Sek Peng Chin, Habibah A Wahab

2128. Distinguish Dengue Serotypes via Codon Usage Patterns

Ming-Wei Su, Hanna S, Yuan, Woei C, Chu

**T6 Poster Session** 

**Exhibition Hall** 

Presenting Time: 10:30 - 11:00 / 14:10 - 14:40

2527. Design, Fabrication and Characterization of a Nanowire-Based Surface Plasmon Resonance Biosensor Kyung Min Byun, Sung June Kim, Donghyun Kim

2640. A New Method to Improve Measurement Precision of PH Meter by Charge Coupled Circuit *Gan Ping* 

**2641. Study on an Amperometric Uric Acid Biosensor** *Zhen Chen* 

2642. Application of Microwave Doppler Transducer for Noninvasive Monitorisation f Cardio-respiratory Activity

Tipa Roxana

2643. Application of Microwave Doppler Transducer in Balistocardiography

Tipa Roxana

2644. Electrochemical Biochip Using an Indicatorpfree Target DNA

Yong-Sung Choi, Se-Joon Park, Kyung-Sup Lee

2645. Biochip Microarray Using Self-Assembly and Magnetic Force Interaction

Yong-Sung Choi, Jong-Dae Moon, Kyung-Sup Lee

2646. Wearable EDA Sensor Gloves using Conducting Fabric and Embedded System

Youngbum Lee, S. W. Yoon, C. K. Lee, M. H. Lee

2647. The 64/176-channel Epicardial Mapping System Used in Basic Research and Clinic Diagnoses the Complex Arrhythmias

Xiaomei Wu, Zùxiang Fang, Cuiwei Yang

2648. Dynamic 3D Epicardial Mapping of Wholeatrium

<u>Cuiwei Yang</u>, Zuxiang Fang, Xiaomei Wu, Anqi Lou, Jun Lu

2649. Electrochemical DNA Sensing using Host-Guest Interaction between \(\frac{4}{3}\)-Cyclodextrin and Ferrocene-Modified DNA

<u>Sung-Wook Choi</u>, Wan-Sung Lee, Sang-Keun Oh, Jae-Ho Kim, Soo-Suk Lee

2650. Post-Mortem Pacemaker Analysis

Roman Zak, Milan Tannenberg

2651. Study on Visual Electrical Evoked Potential *Yue Wang* 

## Design, Fabrication and Characterization of a Nanowire-Based Surface Plasmon Resonance Biosensor

Kyung Min Byun<sup>1</sup> Sung June Kim<sup>1</sup>, and Donghyun Kim<sup>2</sup>

<sup>1</sup> Seoul National University, <sup>2</sup> Yonsei University

calli8@snu.ac.kr

Surface plasmon resonance (SPR) phenomenon is widely used in optical biosensing for detection and analysis of various biological and chemical interactions, such as antibody-antigen interactions, DNA hybridization, biomaterial and cell receptor interactions, and other adsorption processes. In some applications, however, a conventional SPR biosensor suffers from insufficient sensitivity. To overcome the limitation on the sensitivity, SPR biosensors using metallic nanostructures have drawn tremendous interests recently.

Previously, we proposed extremely sensitive SPR biosensors with one-dimensional gold nanowires regularly patterned on a gold film. Our numerical results showed that the sensitivity is enhanced by one or two orders of magnitude and nanowires of a T-profile present more effective than those of an inverse T-profile.

In this study, we fabricated a localized SPR biosensor based on T-profile gold nanowires with SF-10 slide glass as a substrate and coated with 2-nm thick chromium and 40-nm thick gold film. Interference lithography is used to produce nanowires of sub-wavelength period on a large area. The nanowire-based SPR biosensor has been evaluated in a fully automatic SPR measurement setup in real-time. Experimental results confirm that a nanowire-based SPR biosensor can enhance the sensitivity significantly compared to a conventional SPR device, consistent with the numerical calculations.

Keywords: Surface Plasmon Resonance, Sensitivity Enhancement, Nanowires