

PROGRAM BOOK



# WC 2006

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Biomedical Engineering

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*"Imaging the Future Medicine"*

The Triennial World Congress of IUPESM  
The 15th ICMP of IOMP  
The 21st ICMBE of IFMBE

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**T2 Poster Session**

Exhibition Hall

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

**2120. Gene Annotation Using Mass Spectrometric Data**

Yoko Ishino, Hisaaki Taniguchi

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

Rodrigo Duran, 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**

Yoshihiko Tashima, 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

**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, Zuxiang Fang, Cuiwei Yang

**2648. Dynamic 3D Epicardial Mapping of Whole-atrium**

Cuiwei Yang, Zuxiang Fang, Xiaomei Wu, Anqi Lou, Jun Lu

**2649. Electrochemical DNA Sensing using Host-Guest Interaction between Ξâ-Cyclodextrin and Ferrocene-Modified DNA**

Sung-Wook Choi, 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

**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

# **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>

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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