9th International Conference on Photonics and Imaging in Biology and Medicine 2010

(PIBM 2010)

Journal of Physics: Conference Series Volume 277

Wuhan, China
2 - 5 November 2010

Editors:

Qingming Luo                  Lihong V. Wang
Valery V. Tuchin
# TABLE OF CONTENTS

## PLENARY AND INVITED PAPERS:

Mechanotransduction in Endothelial Cells Studied with Fluorescence Imaging ................................. 1

Shu Chien

A Novel Instrument Aimed at Measuring Hypertrophic Scar Formation .................................................. 5


## REGULAR PAPERS:

- **Stimulated Bioluminescence by Fluid Shear Stress Associated with Pipe Flow** ........................................ 12
  Jing Cao, Jiang-an Wang, Ronghua Wu

- **Optimal Discrimination Threshold for the Detection of Singlet Oxygen Luminescence** ...................... 17
  Defu Chen, Huiyun Lin, Yi Shen, Buhong Li, Shusen Xie

- **Iterative Regularization Denoising Method Based on OSV Model for BioMedical Image Denoising** .......... 22
  Chen Guan-nan, Chen Rong, Huang Zai-fung, Lin Ju-qiang, Feng Shang-yuan, Li Yong-zeng, Teng Zhong-juan

- **Comparison of Two Strategies for the Synthesis of Upconverting Nanoparticles as Biological labels** ........ 27
  Sisi Cui, Haiyan Chen, Yueqing Gu

- **Improvement of Skin Optical Clearing Efficacy by Topical Treatment of Glycerol at Different Temperatures** ................................................................. 37
  Zijian Deng, Caihua Liu, Wei Tao, Dan Zhu

- **A Novel Approach of Cardiac Segmentation in CT Image Based on Spline Interpolation** ..................... 45
  Yuan Gao, Pengcheng Ma

- **The Determination of Captopril in Solution by Raman Spectroscopy** .................................................. 51
  Junxiang Gao, Huaimin Gu, Xiao Dong, Fangfang Liu

- **Normal Raman and SERS Spectroscopy of the Vitamin E** ................................................................. 58
  Tianchun Cai, Huaimin Gu, Xiaojian Yuan, Fangfang Liu

- **NIR Area Array CCD-Based Singlet Oxygen Luminescence Imaging for Photodynamic Therapy** .............. 64
  Bolin Hu, Yonghong He, Zhiyu Liu

- **Antibiofouling Polymer Coated Gold Nanoparticles as a Dual Modal Contrast Agent for X-Ray and Photoacoustic Imaging** ......................................................... 73
  Guoji Huang, Yi Yuan, Da Xing

- **Ultrasmall Volume Molecular Isothermal Amplification in Microfluidic Chip with Advanced Surface Processing** ............................................................ 79
  Guoliang Huang, Li Ma, Xiaoyong Yang, Xu Yang

- **The Application of Silver Nanoparticle Based SERS in Diagnosing Thyroid Tissue** ............................ 89
  Zufang Huang, Zanfang Li, Rong Chen, Guannan Chen, Duo Lin, Gangxin Xi, Yongjian Chen, Hongxin Lin, Jinping Lei

- **Single-Shot Parallel Full Range Complex Fourier-Domain Optical Coherence Tomography** .................. 95
  Bingjie Huang, Peng Bu, Nan Nan, Xiangzhao Wang

- **The Spectra Character of Photodegraded the Pyridinoline Cross-Links by Hypocrellin B** ....................... 102
  Jucheng Zhang, Rui Chen, Wei Liu, Zhuo Chen, Lidan Shu, Yingji Liu

- **Ultrafast Fluorescence Spectroscopy of Biologically Relevant Chromophores Using Type II Difference Frequency Generation** ................................................. 106
  J. Léonard, T. Gelot, K. Torgasin, S. Haacke

- **Detection and Analysis of Diamond Fingerprinting Feature and its Application** .................................. 111
  Xin Li, Guoliang Huang, Qiang Li, Shengyi Chen

- **High-Speed Optical Coherence Tomography Signal Processing on GPU** ............................................. 120
  XiQi Li, Guohua Shi, Yadong Zhang

- **Study on the Relationship Between Delayed Fluorescence and Photosynthetic Capability at Elevated Temperature in Higher Plants** ........................................ 127
  Ying Li, Wenhai Xu, Junsheng Wang, Da Xing

- **Laser Homeostatics on Delayed Onset Muscle Soreness** ................................................................. 133

- **Characterizing Lamina Propria of Human Gastric Mucosa by Multiphoton Microscopy** ..................... 143
Parallel Scan Hyperspectral Fluorescence Imaging System and Biomedical Application for Microarrays .............................................................. 147
Zhiyi Liu, Suhua Ma, Yanhong Ji, Le Liu, Jihua Guo, Yonghong He

Microstructure Imaging of Human Rectal Mucosa Using Multiphoton Microscopy ................................................................. 157

Chloride Ion-Dependent Surface-Enhanced Raman Scattering Study of Biotin on the Silver Surface ............................................ 164
Fangfang Liu, Huaizhi Gu, Xiaojuan Yuan, Yue Liu, Xiao Dong

Potable NIR Spectroscopy Predicting Soluble Solids Content of Pears Based on LEDs ....................................................... 172
Yande Liu, Wei Liu, Xudong Sun, Rongjie Guo, Yuanyuan Pan, Aiguo Ouyang

Comparison of Skin Optical Clearing by Different Drug Delivery Method .......................................................... 183
Z. Mao, X. Ge, E. Li

Dextran-coated Fe3O4 Magnetic Nanoparticles as a Contrast Agent in Thermoacoustic Tomography for Hepatocellular Carcinoma Detection ........................................... 189
Huan Qin, Dong Xu, Sihua Yang

Palmot Spectrophotometer for DNA and Protein Measurement in Micro-Nanoliter Assays ................................................. 196
Tian Qiu, Guoliang Huang, Xiaoyong Yang, Li Ma, Xu Yang

Effect of Halides on the Surface-enhanced Raman Spectroscopy of Methylene Blue for Borohydride-reduced Silver Colloid .......................................................... 204
Xiao Dong, Huaimin Gu, Fang Liu

Development of a Novel Spectrophotometer for Biochemical Analyzer Based on Improved Holography Concave Grating Imaging Spectrometer .............................................................. 210
Zhong Ren, Guodong Liu, Longmin Dai, Zhen Huang, Lvming Zeng

Development of a Novel Breast Cancer Detector based on Improved Holography Concave Grating Imaging Spectrometer .......................................................... 218
Zhong Ren, Guodong Liu, Lvming Zeng, Zhen Huang

Transverse Flow-velocity Quantification using Optical Coherence Tomography with Correlation .................................................. 224
Zhiyan Shen, Nan Zeng, Yonghong He

Reduced Prefrontal Cortex Activation in the Color-word Stroop Task for Chinese Dyslexic Children: A Near-Infrared Spectroscopy Study .......................................................... 230
Jinyan Sun, Jiahuan Zhai, Ranran Song, Li Zou, Hui Gong

Reflective Mesoscopic Spectroscopy for Noninvasive Detection of Reflective Index Alternations at Nano-scale ........................................... 237
Yuanhao Tao, Zhihua Ding

Simulation on Scattering Features of Biological Tissue Based on Generated Refractive-Index Model .......................................................... 244
Baoying Wang, Zhihua Ding

Simulation of Medical Q-switch Flash-Pumped Er:YAG Laser .......................................................... 251
Yan-lin Wang, Chuyun Huang, Yucheng Yao, Xiaolin Zou

The Bromination Hypocrellin A and the Spectra Character of the Reaction of Gelatin with the Derivative .......................................................... 258
Wei Liu, Jucheng Zhang, Yong Min, Rui Chen, Aiping Fan, Zelin Yang

Fast Photoacoustic Tomography by use of Acoustic Lens .......................................................... 262
Yadong Wei, Zhilie Tang, Xian Chen, Yongheng He, Haifeng Liu

Simulation on Temperature Field of Radiofrequency Lesions System Based on Finite Element Method .......................................................... 270
D. Xiao, L. Qian, Z. Qian, W. Li

Near-infrared Spectroscopy Technique to Evaluate the Effects of Drugs in Treating Traumatic Brain Edema .......................................................... 278
J. Xie, Z. Qian, T. Yang, W. Li, G. Hu

Relationship Between Muscle Oxygenation by NIRS and Blood Lactate .......................................................... 287
Guodong Xu, Zongzhen Mao, Yanjie Ye, Kunru Lv

Research on the Photography Measurement of the Optical Parameters of the Vegetable Tissues .......................................................... 300
Yang Li, Jiang Zhan-fei, San Jian-hua

Plasmonic-enhanced Fluorescence Emission Using D-shape Microstructured Optical Fiber .......................................................... 307
D. Yong, X. Yu, S. Zhang, C. C. Chan, Y. Zhang, H. P. Ho, D. Liu

Improved Electroporation Parameters of Delivering Silver Nanoparticles into Living C666 Cells for Surface-enhanced Raman Scattering .......................................................... 313
Yun Yu, Juqiang Lin, Zufang Huang, Gangqin Xi, Duo Lin, Yongjian Chen, Rong Chen, Haishan Zeng

Second Harmonic Generation Imaging of Dermal Collagen Component in Human Keloid Tissue .......................................................... 318
H. B. Yu, S. Chen, X. Q. Zhu, H. Q. Yang, J. X. Chen

In vivo Photoacoustic Imaging of Osteosarcoma on Animal Model .......................................................... 322
Mengfei Yu, Fei Ye, Jun Hu

Numerical Simulation of the Micro-explosion During Ho:YAG Laser Lithotripsy .......................................................... 329
Yao Yuchen, Huang Chuyun, Xu Guowang, Yan Xiaodong, Wang Yanlin
Intravascular Photoacoustic Detection of Vulnerable Plaque based on Constituent Selected Imaging ................................................................. 335
   Jian Zhang, Da Xing

Yes-Associated Protein (YAP) Promotes the Nuclear Import of p73 ........................................................................................................... 341
   Heng Zhang, Shengnan Wu

Dynamin-Related Protein 1 Translocates from the Cytosol to Mitochondria During UV-Induced Apoptosis ............................................................................................................................................................................................................................................................... 348
   Zhenzhen Zhang, Shengnan Wu, Jie Feng

A New Theoretical Approach to Single-Molecule Fluorescence Optical Studies of RNA Dynamics .......................................................... 355
   Xinghai Zhao, Guangcun Shan, Shuying Bao

Noninvasive Monitoring of Glucose Concentration using Differential Absorption Low-Coherence Interferometry Based on Rapid Scanning Optical Delay Line ........................................................................................................... 363
   Yong Zhou, Nan Zeng, Yonghong He

Author Index