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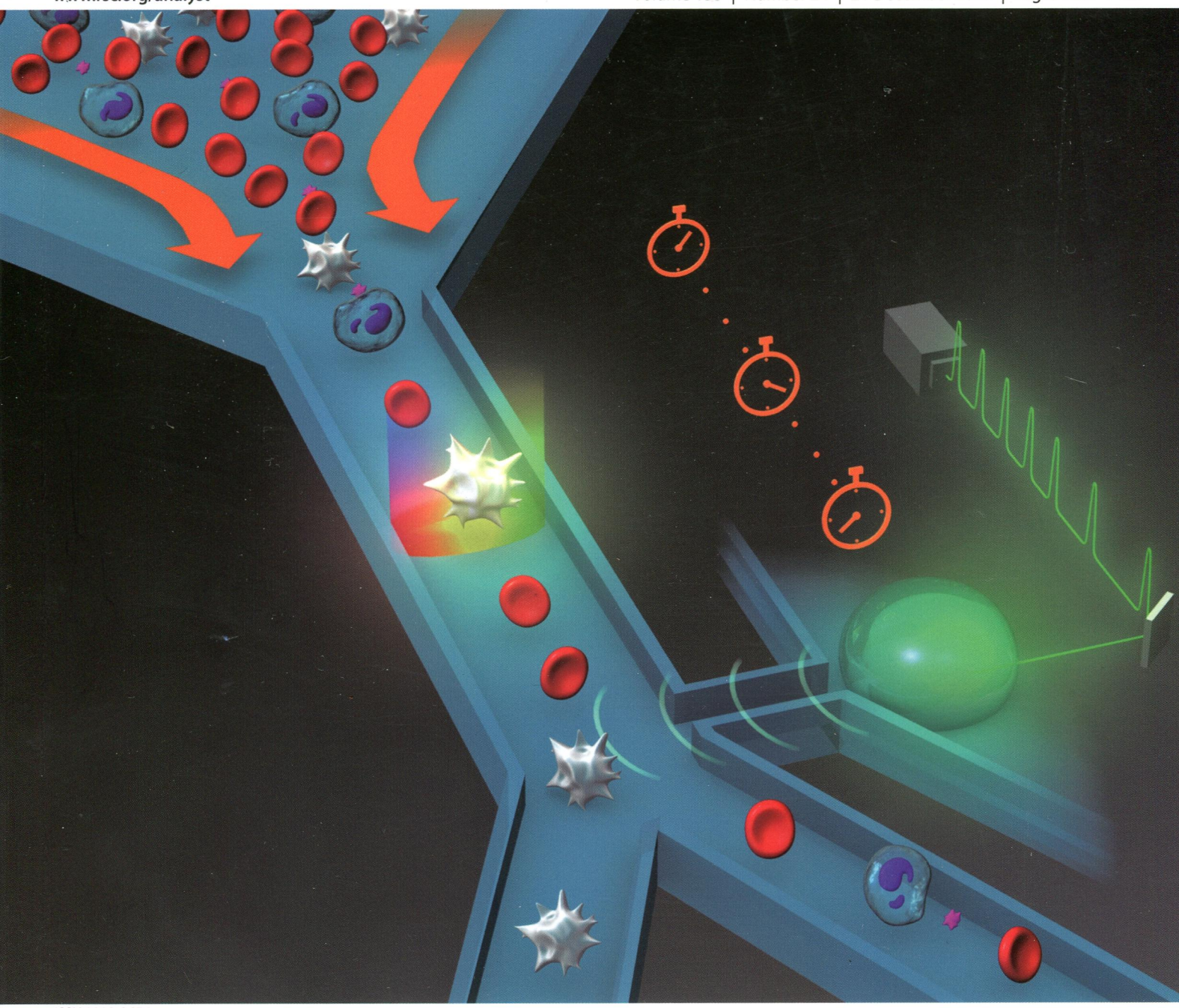

ISSN 0003-2654

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PAPER

Yue Chen, Pei-Yu Chiou *et al.*

3D pulsed laser-triggered high-speed microfluidic fluorescence-activated cell sorter

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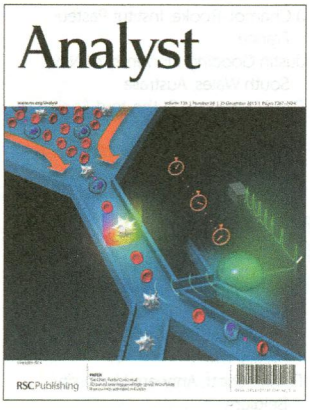

Cover
See Yue Chen, Pei-Yu Chiou *et al.*, pp. 7308–7315.
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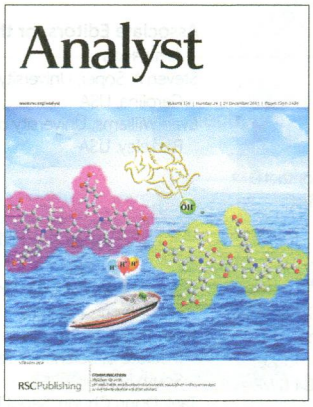


Inside cover
See Meizhen Yin *et al.*, pp. 7289–7293.
Image reproduced by permission of Meizhen Yin from *Analyst*, 2013, **138**, 7289.

EDITORIAL

7276

Molecular Analysis for Art, Archaeometry and Conservation

Francesca Casadio* and Richard P. Van Duyne*

This Editorial introduces the web collection on Molecular Analysis for Art, Archaeometry and Conservation, guest edited by Francesca Casadio and Richard Van Duyne.

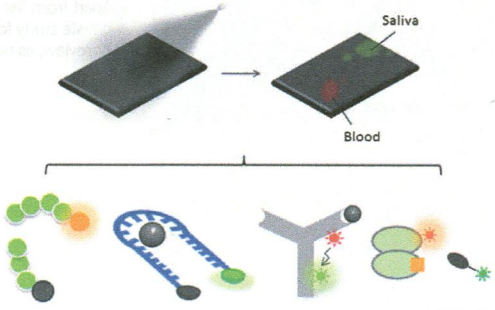
CRITICAL REVIEW

7279

Enabling fluorescent biosensors for the forensic identification of body fluids

Nunzianda Frascione,* James Gooch and Barbara Daniel

This article aims at outlining the problems associated with current body fluid identification techniques and at reviewing biosensing mechanisms that could be potentially adapted to forensic evidence identification and recovery.

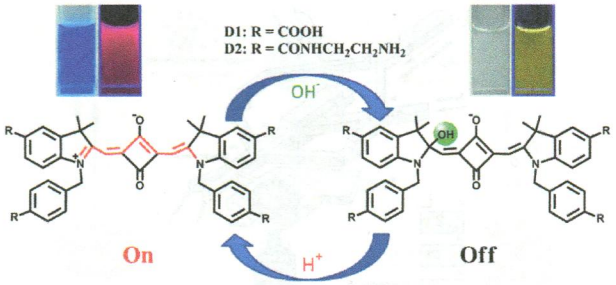


7289

pH switchable and fluorescent ratiometric squarylium indocyanine dyes as extremely alkaline solution sensors

Jie Li, Chendong Ji, Wantai Yang and Meizhen Yin*

Squarylium indocyanine dyes have been developed as near infrared fluorescent ratiometric and pH-switchable indicators with fast responses to extremely alkaline solutions.

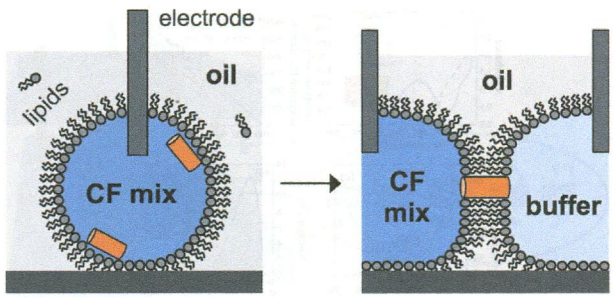


7294

Single-channel electrophysiology of cell-free expressed ion channels by direct incorporation in lipid bilayers

Mark S. Friddin, Natalie P. Smithers, Maïwenn Beaugrand, Isabelle Marcotte,* Philip T. F. Williamson,* Hywel Morgan and Maurits R. R. de Planque*

Ion channels self-insert into lipid bilayers from cell-free protein expression mixtures, enabling single-channel electrophysiology from microliter samples without protein purification or reconstitution procedures.

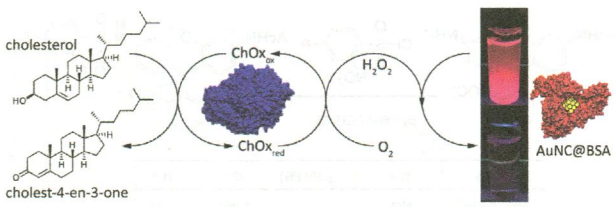


7299

Cholesterol determination using protein-templated fluorescent gold nanocluster probes

Xi Chen and Gary A. Baker*

Protein-stabilized gold nanoclusters plus cholesterol oxidase in an aqueous emulsion comprise a biosensory tandem toward selective fluorimetric cholesterol determination.

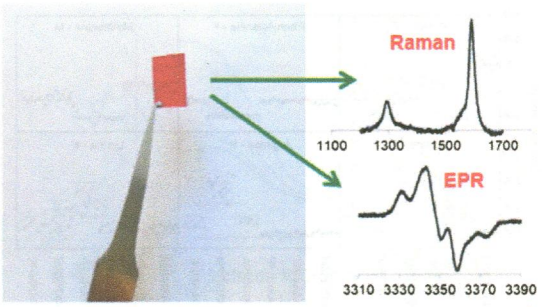


7303

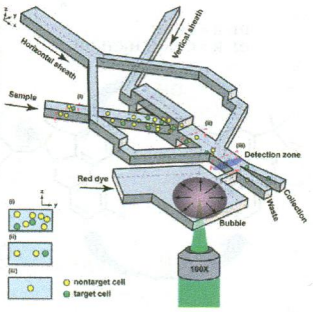
A paper indicator for triple-modality sensing of nitrite based on colorimetric assay, Raman spectroscopy, and electron paramagnetic resonance spectroscopy

Zhibin Wang, Jingfang Wang, Zhiwei Xiao, Junfei Xia, Peipei Zhang, Tao Liu and Jingjiao Guan*

We report a paper indicator that allows for sensing nitrite by colorimetric assay, Raman spectroscopy, and electron paramagnetic resonance spectroscopy with non-overlapping signal wavelength ranges through non-contact means.



7308

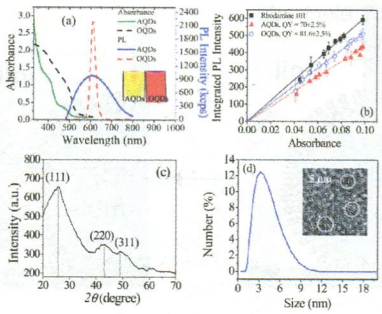


3D pulsed laser-triggered high-speed microfluidic fluorescence-activated cell sorter

Yue Chen,* Ting-Hsiang Wu, Yu-Chun Kung, Michael A. Teitell and Pei-Yu Chiou*

We report a high-throughput and high-purity 3D microfluidic pulsed laser-triggered fluorescence-activated cell sorter (3D PLACS).

7316

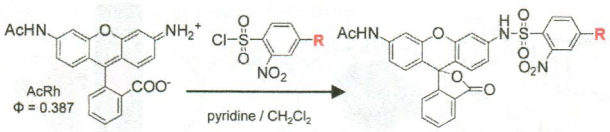


High-conjugation-efficiency aqueous CdSe quantum dots

Giang H. T. Au, Wan Y. Shih and Wei-Heng Shih*

Quantum dots (QDs) are photoluminescent nanoparticles that can be directly or indirectly coupled with a receptor such as an antibody to specifically image a target biomolecule such as an antigen.

7326



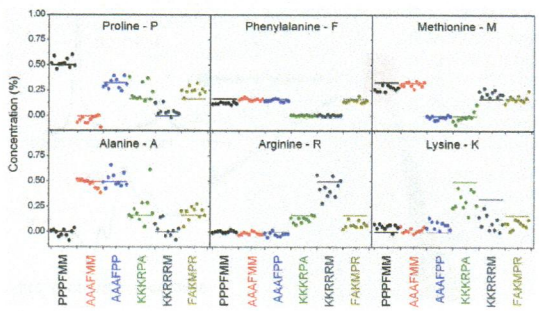
Probes	R =	yield (%)	Φ [a]	σ⁻ [b]
DNs-AcRh	NO_2	–	0.008	1.27
CNs-AcRh	CN	84	0.013	1.01
ANs-AcRh	$COCH_3$	94	0.020	0.87
BNs-AcRh	$COO(CH_2)_3CH_3$	54	0.044	0.76

Fluorogenic probes using 4-substituted-2-nitrobenzenesulfonyl derivatives as caging groups for the analysis of human glutathione transferase catalyzed reactions

Aya Shibata, Yukiko Nakano, Mika Ito, Mika Araki, Jie Zhang, Yasuhiko Yoshida, Satoshi Shuto, Bengt Mannervik, Ralf Mogenstern, Yoshihiro Ito* and Hiroshi Abe*

A series of 4-substituted-2-nitrobenzene-sulfonyl compounds were synthesized for caged fluorogenic probes and a Hammett plot analysis was conducted.

7331



Raman database of amino acids solutions: a critical study of Extended Multiplicative Signal Correction

Patrizio Candeloro,* Elisabetta Grande, Raffaella Raimondo, Daniele Di Mascolo, Francesco Gentile, Maria Laura Coluccio, Gerardo Perozziello, Natalia Malara, Marco Francardi and Enzo Di Fabrizio

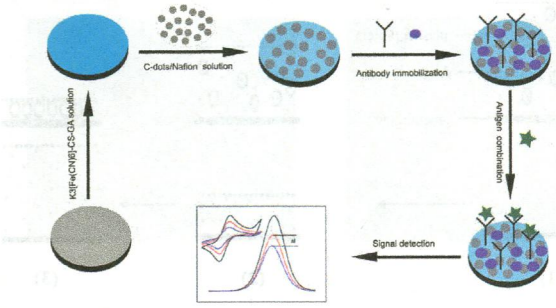
Extended Multiplicative Signal Correction shows its limitations as a tool for retrieving biochemical information from Raman spectra.

7341

Sensitive electrochemical immunoassay of metallothionein-3 based on $K_3[Fe(CN)_6]$ as a redox-active signal and C-dots/Nafion film for antibody immobilization

Min Chen, Chengfei Zhao, Wei Chen, Shaohuang Weng,* Ailin Liu, Qicai Liu, Zongfu Zheng, Jianhua Lin* and Xinhua Lin*

An electrochemical immunosensor using $K_3[Fe(CN)_6]$ as the redox-active compound and C-dots/Nafion film as an antibody (Ab) carrier for the detection of metallothionein-3.

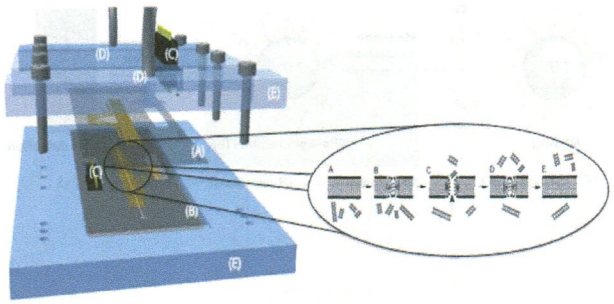


7347

Nucleic acid and protein extraction from electropermeabilized *E. coli* cells on a microfluidic chip

T. Matos, S. Senkbeil, A. Mendonça, J. A. Queiroz, J. P. Kutter and L. Bulow*

An electropermeability method for recovery of nucleic acids and small proteins from *E. coli* cells on a chip.

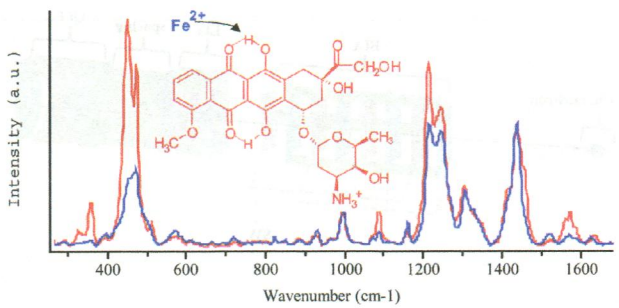


7354

SERS spectroscopic approach to study doxorubicin complexes with Fe^{2+} ions and drug release from SPION-based nanocarriers

Juliette Gautier, Emilie Munnier, Laurence Douziech-Eyrolles, Archibald Paillard, Pierre Dubois and Igor Chourpa*

The SERS approach allows for qualitative and quantitative characterization of doxorubicin–iron molecular complexes.

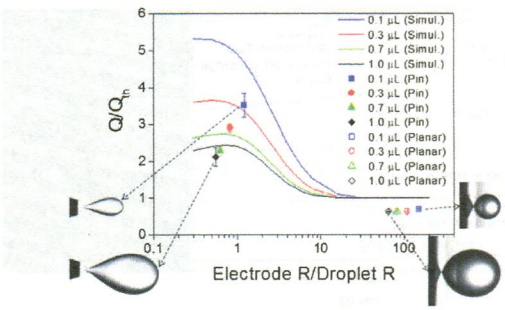


7362

Geometric characterization of optimal electrode designs for improved droplet charging and actuation

Myung Mo Ahn, Do Jin Im* and In Seok Kang*

Droplet charging characteristics depending on the geometry of charging electrodes have been investigated experimentally and numerically for optimal electrode designs.



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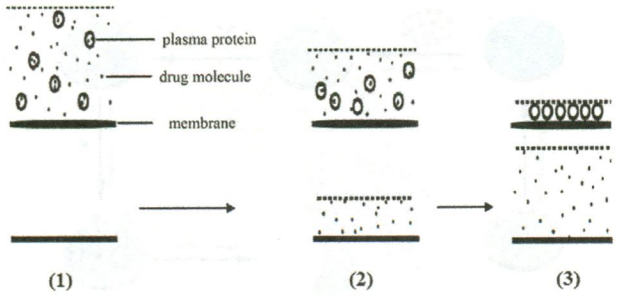
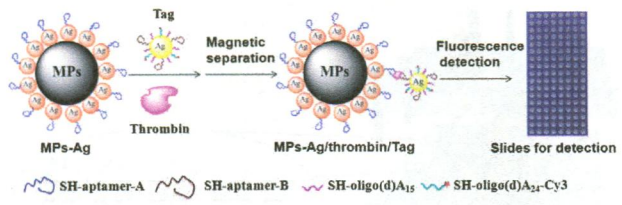


The influence of volume ratio of ultrafiltrate of sample on the analysis of non-protein binding drugs in human plasma

Wei-Chong Dong, Jin-Feng Zhang, Zi-Li Hou, Xin-Hui Jiang, Fu-Cheng Zhang, Hua-Feng Zhang and Ye Jiang*

HFCF-UF was used to determine biapenem in plasma and may become a platform for the determination of other NPB drugs.

7376

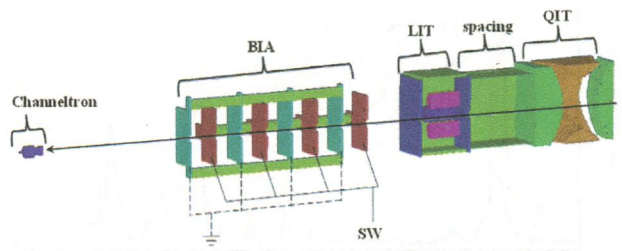


Ultrasensitive and fast fluorescent bioassay based on fluorescence enhancement of silver nanoparticles

Hui Li, Weibing Qiang, Chongzhi Wang, Maika Vuki and Danke Xu*

An ultrasensitive, fast and specific fluorescent platform for protein detection is developed.

7384

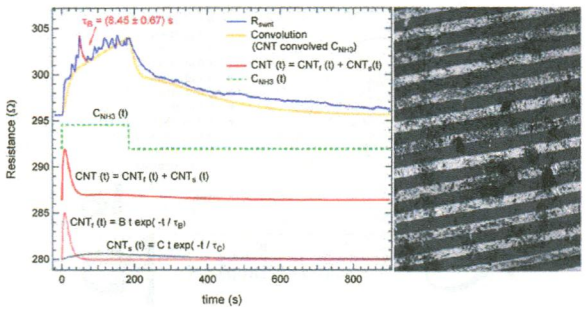


Macromolecular ion accelerator mass spectrometer

Yun-Fei Hsu, Jung-Lee Lin, Ming-Lee Chu, Yi-Sheng Wang and Chung-Hsuan Chen*

High energy accelerator mass spectrometer for large biomolecule analysis.

7392



Enhancing the sensitivity of chemiresistor gas sensors based on pristine carbon nanotubes to detect low-ppb ammonia concentrations in the environment

Federica Rigoni, Silvia Tognolini, Patrizia Borghetti, Giovanni Drera, Stefania Pagliara, Andrea Goldoni and Luigi Sangaletti*

A detection limit of 3 ppb for [NH_3] in the environment is achieved by chemiresistor sensors based on pristine SWCNT.

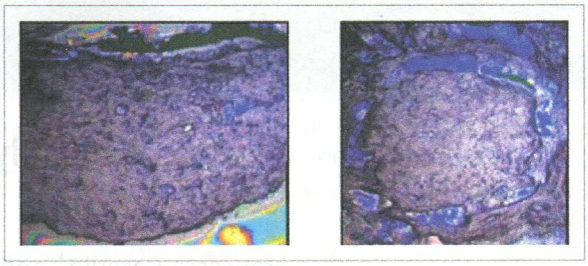
PAPERS

7400

Secondary structure of proteins analyzed *ex vivo* in vascular wall in diabetic animals using FT-IR spectroscopy

Katarzyna Majzner, Tomasz P. Wrobel, Andrzej Fedorowicz, Stefan Chlopicki and Malgorzata Baranska*

Here, we demonstrate that diabetes mellitus alters the protein profile (composition or secondary structures) in the vascular wall.

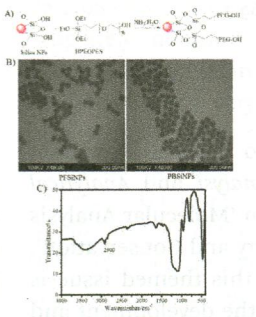


7411

Goat anti-rabbit IgG conjugated fluorescent dye-doped silica nanoparticles for human breast carcinoma cell recognition

Min-Yan Chen, Ze-Zhong Chen, Ling-Ling Wu, Hong-Wu Tang* and Dai-Wen Pang

We report an indirect method for cancer cell recognition using photostable fluorescent silica nanoprobes as biological labels.



ADDITIONS AND CORRECTIONS

7417

Additions and corrections published for 2013.