

Biosensors: surface structures and materials

Compiled and edited by Bharat Bhushan

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The development of micro/nanoelectromechanical systems (MEMS/NEMS) technology, along with new fabrication techniques and their applications to the field of biology and medicine, have led to the field of BioMEMS/NEMS. Applications of BioMEMS/NEMS include micro/nanofluidic type and microarray type biosensors for chemical and biochemical analysis (biosensors) in medical diagnostics (eg DNA, RNA, proteins, cells, blood pressure and toxin identifications), and implantable pharmaceutical drug delivery.

The purpose of this Theme Issue is to present an overview of the field of biosensors, focusing particularly on surface structures and materials. Articles in this issue provide both new research data and future outlooks, identifying where the field is going. This content is likely to appeal to a broad base of scientists.

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Preface: Biosensors: surface structures and materials

B Bhushan

Theory, fabrication and applications of microfluidic and nanofluidic biosensors

S Prakash, M Pinti and B Bhushan

Measurement of slip length on superhydrophobic surfaces

A Maali and B Bhushan

Bioadhesion: a review of concepts and applications

MLB Palacio and B Bhushan

Designing nanostructured block copolymer surfaces to control protein adhesion


SR Schrickler, MLB Palacio and B Bhushan

Biofouling: lessons from nature

GD Bixler and B Bhushan

Towards biodegradable wireless implants

CM Boutry, H Chandralim, P Streit, M Schinhammer, AC Hänzi and C Hierold

 **Monitoring the progression of metastatic breast cancer on nanoporous silica chips**

J Fan, X Deng, JW Gallagher, H Huang, Y Huang, J Wen, M Ferrari, H Shen and Y Hu

A new approach to gas sensing with nanotechnology

S Sharma and M Madou

ImmunoFET feasibility in physiological salt environments

P Casal, X Wen, S Gupta, T Nicholson III, Y Wang, A Theiss, B Bhushan, L Brillson, W Lu and SC Lee

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