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Biomedical Engineering
Wallace H. Coulter Foundation
Seminar Series

Study on Cell Patterning, Counting and Differentiating

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LECTURE: 12:45 PM - 1:45 PM

ENGINEERING CENTER
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Abstract: Recently, much interest has focused on the research of immobilizing living cells within such areas as life science research, toxicity monitoring, clinical diagnostics, and public health protection. As well known, cell immobilization on biocompatible materials in ideal occasion is essential importance to efficiently keep the cell concentration, viability, and natural physiological state of cells, some research fields like electrochemical sensors, microfluidic technology, and cell patterning have paid more attention to construct all kinds of biomaterials in favor of adhering cells for better research on intact living cells. This lecture introduces recent progresses on cell patterning, counting and differentiating in our group. For cell patterning, we presented a novel method for fabricating a patterned Au/PDMS substrate by chemical plating coupled with electrochemical etching strategy. Then, we used an in situ synthesis method which was founded by our previous approach in combination with microfluidic system to build a AgNPs template on PDMS for efficiently directing cell-anchoring with spatial selectivity. Then, we have fabricated two electrochemical sensors based on cell immobilization on the PDMS-PDDA film and 3-aminophenylboronic acid (APBA)-functionalized multiwalled carbon nanotubes (MWCNTs) films. Lastly, we introduce a Lab-on-a-Chip device for cell counting and differentiating.

Biography

Professor Hong-Yuan Chen, Academician of Chinese Academy of Sciences (2001~). Director of Analytical Science Institute, Nanjing University. Graduated from Nanjing University (1961.7); Associate Professor (1985~1988), Full Professor (1988 ~). Visiting scholar (1981~1984) sponsored by K. Adenaur Stiftung at Mainz University, Federal Germany; Research Cooperation as Guest Professor and Visiting Professor in Germany (in 1986, 1989, 1991 and 1997) sponsored by VW, DAAD, DFG.; Obtained 8 Sci. & Techn. Awards of China; Deputy editors of 《Science in China》(Eng. Ed. & Chin. Ed.),《J. Chem. in Chin. Univ.》(Chin. Ed.) and《Chem. Res. in Chin. Univ.》(Eng. Ed.). Published over 630 articles and 8 books. His research interests are focused on the nano-bioelectrochemistry, Surface Electrochemistry & bionic catalysis, and biosensing and micro-nano fluidic analysis.

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