

Isolaton and detection of cells based on their inherent physical properties



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Abstract

The current state-of-the-art methods for isolation and detection of trace specific cells (circulating tumor cells, stem cells and others) in the presence of other cells are based on immune-labeling, which relies on the non-covalent interaction between specific macromolecules (ligand-receptor or antigen-antibody). As there exist significant differences between malignant cells and healthy cells, including the nuclear modification and the changes of attached macromolecules and ions, the electric and mechanical properties of the malignant cells and healthy blood cells are thus different accordingly, and can be employed for sensing and manipulation. The present talk will present a brief discussion on the related issues using cell adhesion and dielectrophoresis.

Biography

Dr. U. Lei is currently a Professor in the Institute of Applied Mechanics at National Taiwan University. He received his B.S. (1979), M.S. (1982) and Ph.D (1985) degrees at National Taiwan University, University of Minnesota and University of California at Berkeley, respectively. His current research interests include fluid mechanics, dielectrophoresis, and biophysics of cells.