Multi-modal Bio-sensing Micro-devices

Centre for International Research on MicroNano Mechatronics (CIRMM)

Information in biological systems, like the neuro-cardiac system, is essentially coded in a multi-modal way through electrical and various bio-molecules signals. For the investigation of that information, multi-modal sensing tools is then needed. Our laboratory is developing multi-modal bio-sensing platforms, which integrate different sensing techniques, for in-vitro biological cells and tissue investigations. We target real-time and high resolution sensing to study cell culture and cell-cell interactions and communication. The platforms are mainly based on Thin-film-Transistor (TFT) technology to realize integrated array of sensors.

TFT technology is usually used for displays.

TFT technology is used here for devices applied to biomedical investigation.

Optical observation

Dielectrophoresis

Electrochemical sensing

Impedance spectroscopy: biomolecule sensing

Impedance spectroscopy: culture monitoring

Integrated MEMS/NEMS technologies for multi-modal biomedical applications
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