## TIXIER-MITA LAB.

## [Integrated Bio-sensing Platforms]

Centre for International Research on MicroNano Mechatronics (CIRMM)

Integrated MEMS/NEMS technologies for biomedical applications

Department of Information and Communication Engineering http://toshi.iis.u-tokyo.ac.jp/toshilab/?Members/Agnes%20Tixier-Mita

How to improve detection of diseases, to investigate new approaches for further understanding of fundamental biomedical questions, and to participate to the evolution of biomedical tools towards personalized medicine?

Precise, sensitive as well as portable tools are needed. In particular platforms integrating various sensing techniques are awaited. Here, platforms based on Thin-film-Transistor (TFT) technology with integrated array of sensors are developed for in-vitro multi-analyses purposes. They combine on the same device sensing of biomolecule, optical and electrical analyses of cells, and the possibility to manipulate and pattern cells.

TFT technology is usually used to make TFT technology is used here to make displays. devices for biomedical applications electrode e sensor RGB olor Filter Substrate **N** . . uid Cristal mounted on a PCB Cross section cardiomyocytes 10 E. density (A/ T=100s /siology Current o 0.01 ectroph Optical observation Dielectrophoresis 100 1000 10 Concentration (x10<sup>-6</sup> M) Electrochemical sensing ē 9 Impedance spectroscopy: biomoleculé sensing ectrophysiology Albumin liver TFT array substrate Alive Impedance Dead spectroscopy: culture monitoring TET Time (s)

