

Micro/nano Fabrication Lab (Pr. Yao)

■ Bio-Sample Preparation by EWOD and Detection

EWOD system used for Bio-sample preparation and detection

Self Magnetic Nano-particle preparation (5-100nm), and surface modification.

zM DNA detection

Droplet Based Chip

- Label process
- Capture and Mixing process
- Selection process
- Dehybridization process

Publications

- *JMM*, May, 2008
- *Bios & Bioelec.*, Sep, 2008
- More than 10 conference papers
- 2 3yrs Integrated Projects

*(Top 4 out of 33 proposals)

■ Bio-Chemical Sensing System (Gas or Cell)

Portable Gas Sensing Equipment

Gas sensing array

Sensing Material

Pd/Au/SiNW sensing chip

*(Top 1 out of 30 proposals)

Publications

- *JMM*, Aug, 2007
- 4 conference papers
- 3 Integrated Projects
- 1 patent

control 5 aM 500 zM 250 zM

Q1
Q2
Q3

NAMIS contact: Pr. Yao
e-mail:

Quantum Microsystems Lab (Pr. Yeh)

■ Optofluidics

- Interaction between fluid and optics
- Auto-focus dielectric liquid lens demonstrated & licensed

2MP AF Dielectric Liquid Lens Module

Focus at 1.2m away

Focus at 5cm away

■ Nanostructures in Bulk

- Physical and electric properties of silicon nanostructures in bulk
- Solar cells demonstrated with reflection of 1%

Nanostructured Silicon Solar Cells

■ InN Ambient Sensors

- Chemical inertness
- Charge accumulation on InN surfaces
- Ion-sensitive FET demonstrated
- High pH sensitivity of 58 mV/decade, close to theoretical limit of 59 mV/decade
- ongoing research: gas (VOC), biomedical

Current (μA) vs Time (s) vs pH value

| Time (s) | pH value |
|----------|----------|
| 60 | 7.83 |
| 120 | 7.88 |
| 180 | 7.92 |
| 240 | 7.96 |
| 300 | 8.04 |
| 360 | 8.09 |
| 420 | 8.15 |
| 480 | 8.20 |
| 540 | 8.23 |
| 600 | 8.28 |
| 660 | 8.34 |
| 720 | 8.37 |
| 780 | 8.40 |
| 840 | 8.46 |
| 900 | 8.50 |
| 960 | 8.55 |

NAMIS contact: Pr. Yeh
e-mail: