Associate Prof. Yi-Je Juang (莊怡哲副教授)

Ph.D.：Chemical and Biomolecular Engineering,
The Ohio State University

Email：yjjuang@mail.ncku.edu.tw

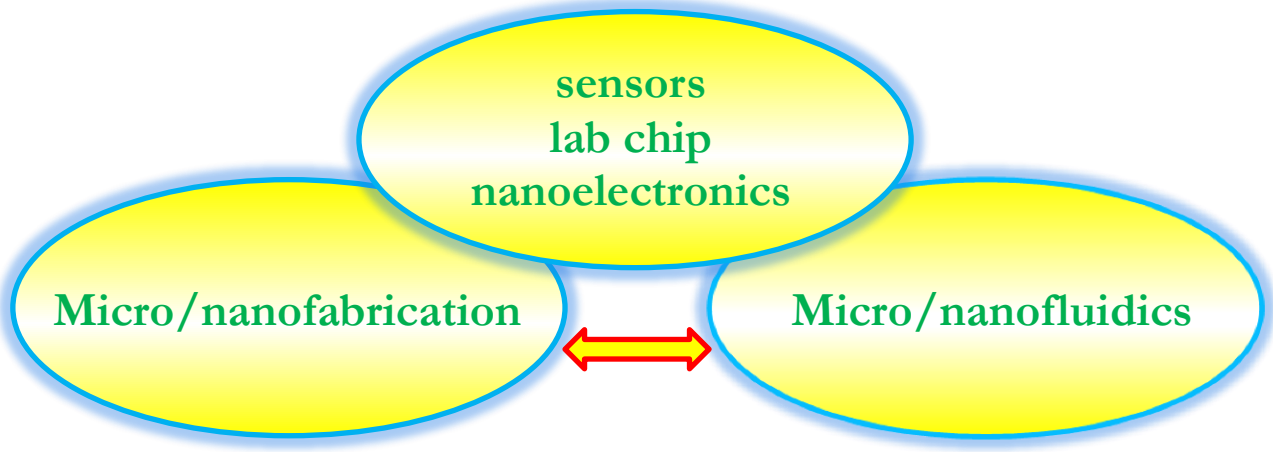
Phone：886-6-2757575 ext 62653

Research Interests

The primary research focus in my lab is (1) to develop and establish novel micro/nano fabrication techniques and (2) to study the flow behavior and manipulation of micro/nano particles (including biomolecules) inside micro/ nanochannels. With developed techniques, acquired understanding of the fluidics, and various lithographic techniques and soft lithography, we then construct the so-called lab chips and the substrate with micro/nano structures, which can potentially be used for chemical analysis, biomedical applications and development of nanoelectronics. Besides, we also involve in energy related research such as sorting and analysis of microalgae, microfluidic fuel cell, silicon based solar cell, etc.

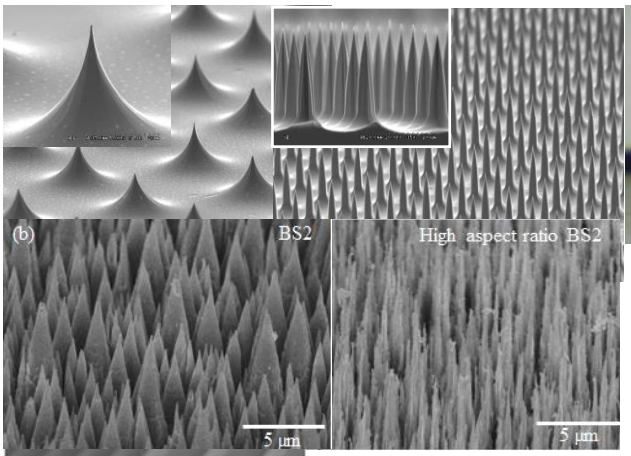
Representative Publications

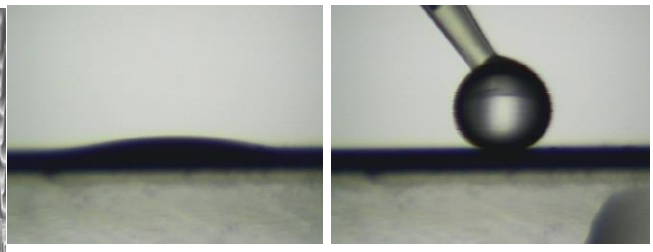
- **Juang, Y.-J.**, Lee, L. J.*, and Koelling K. W., *Polymer Engineering and Science*, **42(3)**, 539-550, 551-566 (2002) (SCI, IF: 0.89, 33/126 in Engineering/Chemical).
- **Juang, Y.-J.**, Wang, S., Hu, X., and Lee, L. J.*, *Physical Review Letters*, **93(26)**, 268105 (4pp) (2004) (SCI, IF: 7.218, 4/67 in Physics/Multidisciplinary).
- Jheng, Z.-J., Fang, Y.-C., Lo, K.-F., and **Juang, Y.-J.***, *Journal of Micromechanics and Microengineering*, **19**, 045016 (6pp) (2009) (SCI, IF: 2.233, 12/112 in Mechanics).
- Deng, Y.-L. and **Juang, Y.-J.***, *Biomicrofluidics*, **7**, 014111 (9pp) (2013) (SCI, IF: 3.385, 3/31 in Physics, Fluids & Plasma).
- Deng, Y.-L. Chang, J.-S., and **Juang, Y.-J.***, *Bioresource Technology,* **135**, 137-141 (2013) (SCI, IF: 4.75, 1/12 in Agricultural Eng.).



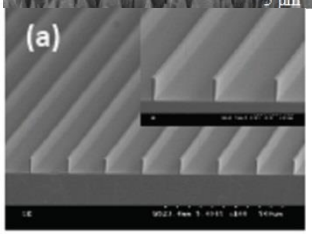
Micro/nanofabrication & Micro/nanofluidics Lab (M&M)

Micro/nanofabrication

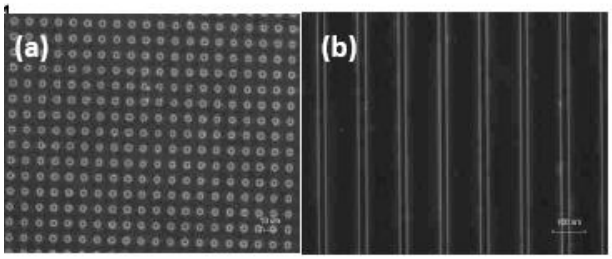




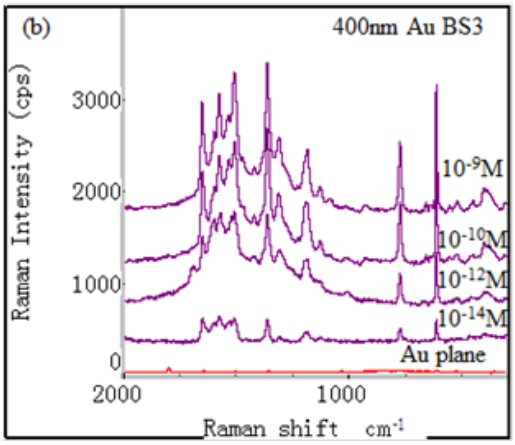
The modified black silicon



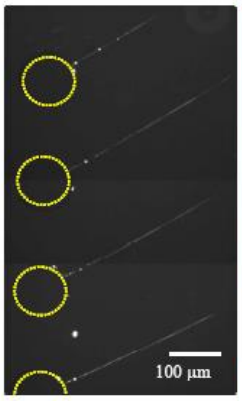
Micro/nanostructures with different aspect ratios



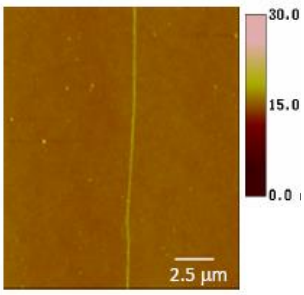
Formation of (a) nanorings and (b) lines structures via capillarity



SERS detection of R6G on black silicon substrate

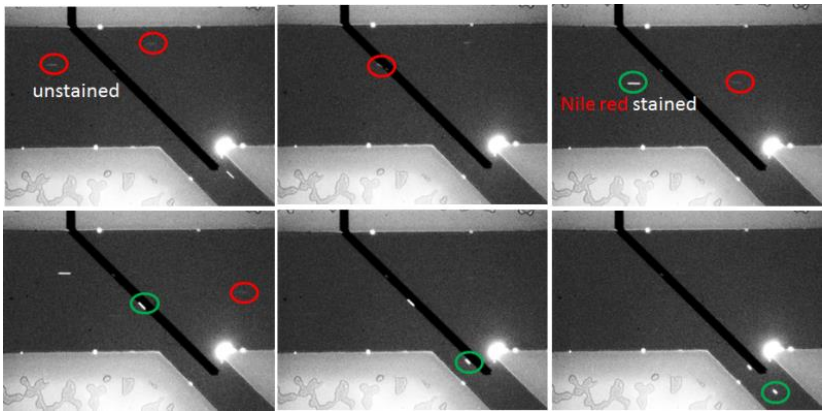


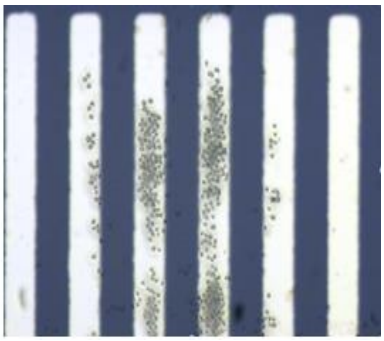
DNA nanowires



Pd nanowire.

Micro/nanofluidics





Sorting microalgae by dielectrophoresis (DEP)

Aggregation of microparticles by DEP