



大同大學機械工程系

薄膜力學與微流體晶片實驗室

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教學重點

近兩年教授課程:

- 半導體工程導論
- 生物晶片導論
- 固體力學導論
- 微流體晶片
- 應力分析
- 微系統設計製造與分析



研究重點

薄膜力學:

- 中間層與基材對類鑽碳薄膜機械性質影響
- 彈.塑.熱性質不匹配對薄膜系統機械性質與應力的探討
- 中間層與表面性質對類鑽碳薄膜機械性質影響之研究



研究重點

微流體晶片：

- 介電泳力應用於酵母菌細胞與奈米碳管分離
- 不同流道嵌入物設計對流體混合效率影響之研究
- 介電泳生物晶片應用於細胞裂解研究
- 電滲力應用於細胞/粒子收集效率之探討



研究重點

感熱性水膠:

- 成分對水膠性質的影響
- 感溫性水膠運用於微閥體流道的製程及效率探討
- 感溫性水膠運用於細胞組織工程



重要設備



氧氣電漿機



熱壓機



重要設備



光學顯微鏡



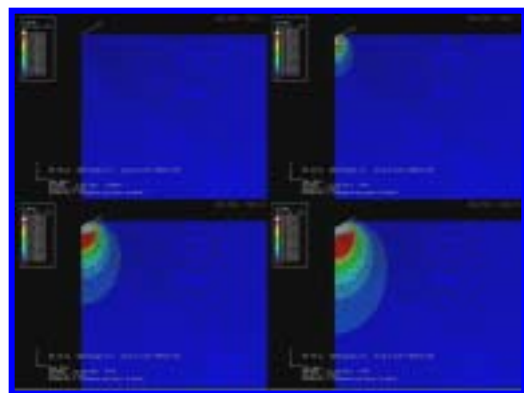
離心機



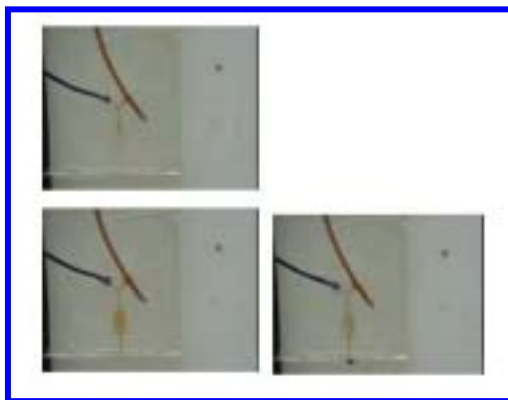
微泵浦機



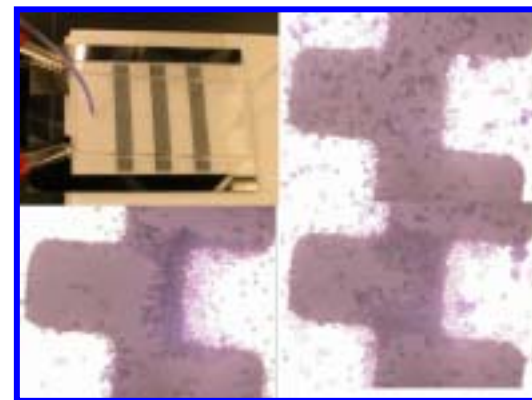
研究成果



奈米壓痕FEM模擬



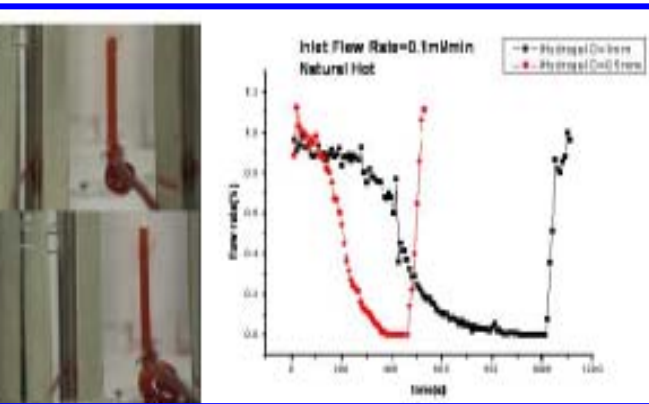
流體混合晶片



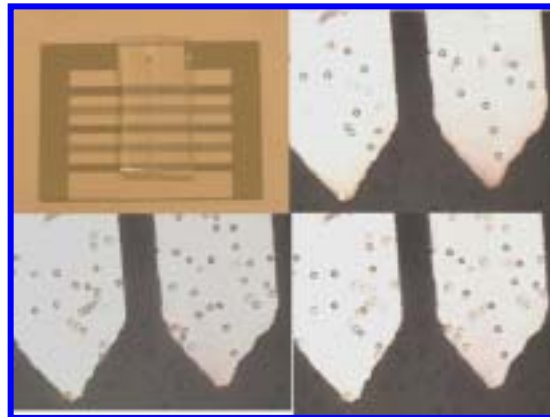
細胞分離晶片



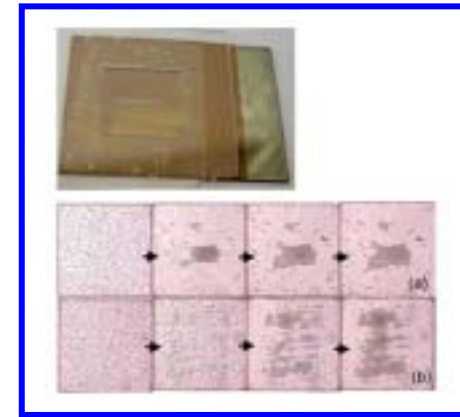
研究成果



水膠閥體晶片



細胞裂解晶片



細胞/粒子收集晶片



研究成果

近四年研究論文發表

- F. C. Tai, S. C. Lee, Chehung Wei, P. J. Wei, and J. F. Lin, "Thermal treatment effects on hard and soft films measured by nanoindentation test," Journal of Material Research, Vol. 24 No. 3 pp 1069-1074 March (2009).
- F. C. Tai, S. C. Lee, Jiunn Chen, Chehung Wei, and S. H. Chang, "Multipeak fitting analysis of Raman spectra on DLCH film," Journal of Raman Spectroscopy, DOI: 10.1002/jrs.2234 (2009).
- Chehung Wei, Ting-You Wei, Cheng-Hao Liang, and Fong-Cheng Tai, "The separation of different conducting multiwalled carbon nanotubes by ac dielectrophoresis," Diamond and Related Materials, Vol 18 332-336, (2009).
- Chehung Wei, Yi-Shun Wang, and Fong-Cheng Tai, "The role of metal interlayer on thermal stress, film structure, wettability and hydrogen content for diamond like carbon films on different substrate," Diamond and Related Materials, Vol 18 407-412, (2009).
- Chehung Wei, You-Zhong Shih, Yu-Hsin Chien, and John-Min Chen, "The Effect of Microstructure on the Reflectivity Loss of Single Crystal Silicon," Proceedings of the 15th International Display Workshops, Proceedings of the 15th International Display Workshops pp.1323-1324(2008) .
- Chehung Wei and John-Min Chen, "A General Purpose Configuration Design of Magnetic Board for Better Film Coating Uniformity," Proceedings of the 15th International Display Workshops, Proceedings of the 15th International Display Workshops 2008 pp.1857-1858.
- Iching Kuan, Weiguo Gu, JianchengWu, Chehung Wei, Koshao Chen, and Chiyang Yu, "Effects of grafting poly(ethylene oxide) on the amplification efficiency of a PDMS-based flow-through PCR device," Chemical Engineering Journal, Vol 143, Issues 1-3, pp 326-330 (2008).
- Chehung Wei, Cheng-Hou Liang, and Ting-You Wei, "The application of dielectrophoresis on the characterization of electric property in multi-walled carbon nanotubes," Proceedings of SPIE Vol. 7037, Proceedings of SPIE Vol. 7037, 703708 (2008).
- Chehung Wei, You-Zong Shih, and Ching-Chieh Wang, "The effect of chamber size on collection efficiency and pattern in 3D electroosmosis chip," Proceedings of SPIE Vol. 7039, Proceedings of SPIE Vol. 7039, 70391H (2008).
- Chehung Wei and Chien-Hung Chen, "The effect of thermal and plastic mismatch on stress distribution in diamond like carbon film under different interlayer/substrate system," Diamond and Related Materials, 17, 1534-1540 (2008).



研究成果

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- Chehung Wei, Che-Wei Hsu, and Ching-Chieh Wang, "The role of electro-osmosis and dielectrophoresis in collection of micro/nano size particles in low frequency AC electric field," Proc. SPIE 6645, Proc. SPIE 6645, 664528 (2007).
- Shih-Chin Lee, Fong-Cheng Tai, and Chehung Wei, "Correlation between sp²/sp³ Ratio or Hydrogen Content and Water," Materials Transactions, Vol 48 No 9 pp. 2534-2538, 2007.
- Shih-Chin Lee, Fong-Cheng Tai, Chehung Wei, and Jui-I Yu, "ATR-FTIR and Nanoindentation Measurements of PMDA-ODA Polyimide Film under Different Curing Temperature," Materials Transactions, Vol. 48, No. 6 pp. 1554-1557 (2007).
- Chehung Wei and Jui-Ying Yen, "Effect of Film Thickness and Interlayer on the Adhesion Strength of Diamond Like Carbon Films on Different Substrates," Diamond & Related Materials, Vol. 16, pp. 1325-1330, (2007).
- Chehung Wei and Yu-Hung Chen, "The Effect of Bias Power on the Etching Rate and Uniformity of Silicon Dioxide for N-Slot Inductively Coupled Plasma in TFT Application," Advances in Nanomaterials and Processing (Solid State Phenomena), pp.291 -294 (2007).
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- Fong-Cheng Tai, Shih-Chin Lee, and Chehung Wei, "Spin-Coating Polyimide Film on Hydrogenated DLC Film Surface Prepared by Ion Beam Deposition Method," Materials Transactions, Vol. 47 No. 07, pp.1869-1873, (2006).
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