

動機系專任教師研究計畫、論文發表統計表

戊 光機電及生醫系統組

劉通敏 教授(T. M. Liou)

研究計畫—國科會		
年 度	計畫名稱	總經費
2006	離散式立體突出元件陣列應用於靜止與週期運動管道熱流特性改進之研究(2 / 3)	1,643,000
	不同角度側向穴流應用於顱內動脈瘤血流動力特性之模擬(1 / 3)	1,025,000
2007	不同角度側向穴流應用於顱內動脈瘤血流動力特性之模擬(2 / 3)	1,048,000
	離散式立體突出元件陣列應用於靜止與週期運動管道熱流特性改進之研究(3 / 3)	1,574,000
2008	不同角度側向穴流應用於顱內動脈瘤血流動力特性之模擬(3 / 3)	1,265,000
	運用微視流技術與數值計算研究壓電噴墨噴覆於為凹槽之特性-蝕刻時間 / 驅動波形 / 凹槽幾何之效應 (1 / 3)	1,384,000

研究計畫—業界計畫		
年 度	合作廠商	計畫件數
2006	中科院	1
	台聯大榮清計畫	1
2007	台聯大榮清計畫	1
	金利橡膠股份有限公司	1
2008	金利橡膠股份有限公司	1

SCI 論文發表	
年度	論文
2006	1.T.M. Liou, Yi-Sian Hwang and Yi-Chen Li, April 2006, "Flowfield and Pressure Measurements in a Rotating Two-Pass Square Duct with staggered Rounded Ribs Skewed 45-deg to the Flow," <i>Trans. ASME, Journal of Turbomachinery</i> , Vol.128, pp.340-348 (A Selected Paper (GT2004-53173) from the 49th Gas Turbine and Aeroengine Congress/Users Symposium and Exposition, Viena, Austria (SCI, EI)).

	2.T.M. Liou, C.H. Tsai, Y.C. Li, T.W. Ting, and C.B. Luo, May 2006, "Numerical Analysis of Steady Blood Flow in Three Dimensional Reconstructed Left Internal Carotid Artery with an Aneurysm," <i>Journal of Aeronautics, Astronautics and Aviation</i>, Series B, Vol.38, No.1, pp.029-036 (SCI). 3.T.M. Liou and Y.C. Li, Oct 2006, "Alteration of Haemodynamics in a Stented Lateral Aneurysm Model by Blocking Ratios," <i>WSEAS Transaction on Fluid Mechanics</i>, Issue.8, Vol.1, pp.850-855 (A Selected Paper from 3rd WSEAS International Conference on Mathematical Biology and Ecology (MABE'07), Brisbane, Australia)
2007	1.S. W. Chang, T.M. Liou, W.-H. Yeh and J.-H. Hung, Feb 2007, "Heat Transfer in a Radially Rotating Square-Sectioned Duct With Two Opposite Walls Roughened by 45-deg Staggered Ribs at High Rotation Numbers," <i>Trans. ASME, Journal of Heat Transfer</i>, Vol.129, Issue 2, pp.188-199 (SCI, EI) 2.T.M. Liou, H. Chen, M.Y. Chen and Y.C. Li, Feb 2007, " Experimental Study of Confined Turbulent Rectangular Jets," <i>Journal of the Chinese Society of Mechanical Engineers</i>, Vol. 28, No.1, pp45-51. (An Invited Paper for a Special Issue Dedicated to Dr. T.Y. Wung on His 75th Birthday) (SCI, EI) 3.T.M. Liou, Y.S. Hwang and M.Y. Chen, June 2007, "Heat Transfer Improvement by Arranging Detached Ribs on Suction Surfaces of Ribbed Rotating Internal Coolant Passages," <i>International Journal of Heat and Mass Transfer</i>, Vol.50, Issue11-12, pp.2414-2424 (SCI, EI) 4.T.M. Liou, Y.C. Li, and W.C. June, June 2007, "Numerical and Experimental Studies on Pulsatile Flow in Aneurysms Arising Laterally from a Curved Parent Vessel at Various Angles," <i>Journal of Biomechanics</i>, Vol.40, No.6, pp.1268-1275 (SCI, EI) 5.S.W. Chang, W.D. Morris, T.M. Liou, and S.F. Chiou, July-Sep 2007, "Heat transfer in a Reciprocating Thermosyphon Fitted with two staggered transverse ribs," <i>AIAA Journal of Thermophysics and Heat Transfer</i>, Vol.21, No.3, pp.568-581 (SCI, EI) 6.T.M. Liou, S.W. Chang, J.H. Hung, and S.F. Chiou, Sep 2007, " High Rotation Number Heat Transfer of a 45-deg Rib-Roughened Rectangular Duct with Two Channel Orientations" <i>International Journal of Heat and Mass Transfer</i>, Vol.50, pp.4063-4078. (SCI, EI)
2008	1.S.W. Chang, T.M. Liou, K.F. Chiang, and G.F. Hong, Feb 2008, "Heat Transfer and Pressure Drop in Rectangular Channel with Compound Roughness of V-Shaped Ribs and Deepened Scales" <i>International Journal of Heat and Mass Transfer</i>, Vol.51, pp.457-468 (SCI, EI) 2.T.M. Liou, C.Y. Chan, C.C. Fu, and K.C. Shih, Apr 2008, "Effects of Impact Inertia and Surface Characteristics on Deposited Polymer Droplets in Microcavities," <i>IEEE J. MEMS</i>, Vol.17, No.2, pp.278-287 (SCI, EI) 3.T.M. Liou, and Y.C. Li, June 2008, Effects of Stent Porosity on Hemodynamics in a Sidewall Aneurysm Model," <i>Journal of Biomechanics</i>, Vol.41, No.6, pp.1174-1183 (SCI, EI) 4.S.W. Chang, T.M. Liou, S.F. Chiou, and S.F. Chang, June 2008, "Heat Transfer in High-Speed Rotating Trapezoidal Duct with Rib-Roughened Surfaces and Air Bleeds from the Wall on the Apical Side," GT2007-28174, <i>Trans. ASME, Journal of Heat Transfer</i>, Vol.130, No.6, pp.061702-1 to 13 (SCI, EI) 5.T.M. Liou, Y.C. Li, and T.C. Wang, June 2008, "Hemodynamics altered by placing helix stents in an aneurysm at 45-deg angle to the curved vessel," <i>Physics in Medicine and Biology</i>, Vol.53, pp.3763-3776 (SCI, EI) (Impact Factor = 2.874) 6.S.W. Chang, T.M. Liou, J.S. Liou, and K.T. Chen, Nov 2008, "Turbulent Heat Transfer in a Tube Fitted with Serrated Twist Tape under Rolling and Pitching Environments with

	<i>Applications to Shipping Machineries,” Journal of Ocean Engineering, Vol.35, No.16, pp.1569-1577 (SCI, EI)</i> 7.S.W. Chang, T.L. Yang, T.M. Liou, and G.F. Hong, March 2008, Heat Transfer of Rotating Rectangular Duct with Compound Scaled Roughness and V-ribs at High Rotation Number, International Journal of Thermal Sciences, Vol.48, Issue 1, pp.174-187 (SCI, EI) 8.S.W. Chang, T.L. Yang, T.M. Liou, and H.G. Fang, Dec 2008, Heat Transfer in Rotating Scale-Roughened Trapezoidal Duct at High Rotation Numbers, Applied Thermal Engineering (SCI, EI) (in press) 9.S.W. Chang, T.M. Liou, T.L. Yang, and G.F. Hong, June 2008, "Heat Transfer in Radially Rotating Pin-fin Channel at High rotation numbers," Trans. ASME, Journal of Turbomachinery, Vol.xxx, pp.xxx-xxx (A Selected Paper (GT2008-50514) from the 51th Gas Turbine and Aeroengine Congress/Users Symposium and Exposition, Berlin, Germany) (SCI, EI). (in press) 10.W.K. Chang, C.H. Chen and T.M. Liou, 2008 “Numerical Study for Downward Flame Spread over a Finite-Length PMMA with Radiation Effect,” International Journal of Transport Phenomena (SCI, EI) (in press)
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洪哲文 教授(C. W. Hong)

研究計畫—國科會		
年度	計畫名稱	總經費
2006	先進智慧個人運輸概念車設計--子計畫二：先進概念車燃料電池組構裝與能量管理系統設計(3/3)	963,000
	微直接甲醇燃料電池多尺度分析設計與製造整合研究-總計畫(3/3)	1,069,000
2007	超級電容器輔助燃料電池混成車動態性能設計 (I)	540,000
	微型固態氧化物燃料電池多尺度設計與輔助發電系統製作	1,008,000
2008	染料光敏太陽電池多尺度模擬與研發	630,000
	生醫酵素燃料電池多尺度模擬與試作	966,000
	協助產業因應溫室氣體二氧化碳之減量及利用	420,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2006	行政院原子委員會核能研究所	1 件

SCI 論文發表	
年度	論文

2006	1. P. H. Lin, <u>C. W. Hong*</u>, "On the Start-up Transient Simulation of a Turbo Fuel Cell System", <i>J. of Power Sources</i>, Vol. 160, pp. 1230-1241, 2006. (SCI, EI, IF 2.809) (5/64 Subject Categories: Energy & Fuels) 2. K. Fei, C. H. Cheng, <u>C. W. Hong*</u>, "Lattice Boltzmann Simulations of CO₂ Bubble Dynamics at the Anode of a 變DMFC", <i>ASME Transactions J. of Fuel Cell Science and Technology</i>, Vol. 3, pp. 180-187, 2006. (SCI, EI, IF 0.825) (33/64 Subject Categories: Energy & Fuels) 3. P. H. Lin, W. C. Lin, <u>C. W. Hong*</u>, "Cold Start Dynamics and Control of the SOFC APU for Automotive Applications", <i>Proc. of Int. Sym. on Advanced Vehicle Control</i>, Vol. 1, pp. 523-528, 2006. (EI) 4. C. H. Wu, W. C. Lin, <u>C. W. Hong*</u>, "Ultracapacitor Dynamics for Fuel Cell Vehicle Control", <i>Proc. of Int. Sym. on Advanced Vehicle Control</i>, Vol. 1, pp. 529-534, 2006. (EI)
2007	1. C. H. Cheng, S. F. Lee, <u>C. W. Hong*</u>, "Ionic Dynamics of an Intermediate Temperature Yttria-Doped Ceria Electrolyte", <i>Journal of The Electrochemical Society</i>, Vol. 154, No.10, pp. 158-163, 2007. (SCI, EI, IF 2.483) (1/18 Subject Categories: Materials Science, Coatings & Films) 2. S. F. Lee, C. H. Cheng, W. H. Chen, <u>C. W. Hong*</u>, "Nano-scale Analysis of Low Temperature Solid Oxide Fuel Cell Electrolytes", <i>Electro Chemical Society Transactions-Solid Oxide Fuel Cells</i>, Vol. 7, pp. 2253-2260, 2007. (EI) 3. C. H. Cheng, K. Fei, <u>C. W. Hong*</u>, "Computer Simulation of Hydrogen Proton Exchange Membrane and Direct Methanol Fuel Cells", <i>Computers and Chemical Engineering</i>, Vol. 31, pp. 247-257, 2007. (SCI, EI, IF 1.238) (32/114 Subject Categories: Engineering, Chemical) 4. K. Fei, <u>C. W. Hong*</u>, "All-angle Removal of CO₂ Bubbles from the Anode Microchannels of a Micro Fuel Cell by Lattice Boltzmann Simulation", <i>Microfluidics and Nanofluidics</i>, Vol. 3, pp. 77-88, 2007. (SCI, EI, IF 2.241) (4/55 Subject Categories: Instruments & Instrumentation) 5. C. H. Cheng, <u>C. W. Hong*</u>, "Investigation of Atomistic Scale Transport Phenomena of the Proton Exchange Membrane Fuel Cell", <i>ASME Transactions J. of Fuel Cell Science and Technology</i>, Vol. 4, pp.474-480, 2007 (SCI, EI, IF 0.825) (33/64 Subject Categories: Energy & Fuels) 6. Y. H. Hung, <u>C. W. Hong*</u>, "Bond Graph Modelling of Fuel Cell and Engine Hybrid Electric Scooters," <i>International Journal of Vehicle Design</i>, Vol. 45, No. 4, pp.533-541, 2007. (SCI, EI, IF 0.183) (17/22 Subject Categories: Transportation Science & Technology)

2008	1. C. P. Chiu, C. W. Hong*, "Magnetic Field Effect on the Hydronium Diffusivity at an Enzymatic Biofuel Cell Anode via Atomistic Analysis", <i>ASME Transactions J. of Fuel Cell Science and Technology</i>, 2008 (in print) (SCI, EI, IF 0.825) (33/64 Subject Categories: Energy & Fuels) 2. P. Y. Chen, C. P. Chiu, C. W. Hong*, "Molecular Analysis on Methanol Diffusion in a Model Nafion Membrane", <i>Journal of The Electrochemical Society</i>, Vol. 155, B1255-1263, 2008. (SCI, EI, IF 2.483) (1/18 Subject Categories: Materials Science, Coatings & Films) 3. K. Fei, W. H. Chen, C. W. Hong*, "Microfluidic Analysis of CO2 Bubble Dynamics Using Thermal Lattice-Boltzmann Method", <i>Microfluidics and Nanofluidics</i>, Vol. 5, pp.119-129, 2008. (SCI, EI, IF 2.241) (4/55 Subject Categories: Instruments & Instrumentation) 4. C. H. Cheng, P. Y. Chen, C. W. Hong*, "Atomistic Analysis of Hydration and Thermal Effects on Proton Dynamics in the Nafion Membrane", <i>Journal of The Electrochemical Society</i>, Vol. 155, No. 4, pp. 435-442, 2008. (SCI, EI, IF 2.483) (1/18 Subject Categories: Materials Science, Coatings & Films) 5. K. Fei, C. P. Chiu, C. W. Hong*, "Molecular Dynamics Prediction of Nanofluidic Contact Angle Offset by an AFM", <i>Microfluidics and Nanofluidics</i>, Vol. 4, pp. 321-330, 2008. (SCI, EI, IF 2.241) (4/55 Subject Categories: Instruments & Instrumentation) 6. Y.H. Hung, P.H. Lin, C.H. Wu, C. W. Hong*, "Real-Time Dynamic Modeling of Hydrogen PEMFCs", <i>Journal of The Franklin Institute</i>, Vol. 345, Issue 2, pp.182-203, 2008. (SCI, EI, IF 0.441) (40/67 Subject Categories: Engineering, Multidisciplinary)
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劉承賢 教授(C. H. Liu)

研究計畫—國科會		
年度	計畫名稱	總經費
2006	微直接甲醇燃料電池系統多尺度分析設計製造整合研究--子計畫三：氣液相微型毛細管致動幫浦設計最佳甲醇濃度回授供給控制(3/3)	995,000
	利用奈米科技探討細菌與寄主細胞之交互作用(2/3)	1,300,000
2007	仿蓮葉效應之微流體致動及其應用之研究	617,000
	利用奈米科技探討細菌與寄主細胞之交互作用(3/3)	1,300,000
2008	仿肝組織重建之肝臟實驗室晶片及晶片上/體內肝組織生理病變之研究 (1/3)	12,000,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2006	台灣積體電路製造股份有限公司	1
	瑞鼎科技股份有限公司	1
2007	瑞鼎科技股份有限公司	1
	工研院	1
2008	國家實驗研究院國家太空中心	1
	瑞鼎科技股份有限公司	1

SCI 論文發表

年度	論文
2006	1. Ruei-Zeng Lin, Chen-Ta Ho, Cheng-Hsien Liu, and Hwan-You Chang, "Dielectrophoresis-based cell patterning for tissue engineering," <i>Biotechnology Journal</i>, 2006, 1, 949-957, September 2006(國科會補助之研究計畫所產生 94-2120-M-009-015-) 2. Bo-Jui Chang, Ying-Jung Huang, Chia-Han Chan, Long Hsu, Hwei-Ling Peng, Hwan-You Chang, Tri-Rung Yew, Cheng-Hsien Liu, and Sien Chi, "Measurement of the adhesive force between a single <i>Klebsiella pneumoniae</i> type 3 fimbria and collagen IV using optical tweezers," <i>Biochemical and Biophysical Research Communications</i> Volume 350, Issue 1, 10 November 2006, pp. 33-38(國科會補助之研究計畫所產生 95-2120-M-009-005) 3. Pei-Yin Chi, Hung-Yi Lin, Cheng-Hsien Liu and Chii-Dong Chen, "Generation of nano-scaled DNA patterns through electro-beam induced charge trapping," <i>Nanotechnology</i> 2006, 17 4854-4858 4. Chen-Ta Ho, Ruei-Zeng Lin, Wen-Yu Chang, Hwan-You Chang, Cheng-Hsien Liu, "Rapid heterogeneous liver-cell on-chip patterning via the enhanced field-induced dielectrophoresis trap," <i>Lab on a Chip</i>, 2006, 6, 724 – 734 (國科會補助之研究計畫所產生 94-2120-M-009-015-) 5. Ching-Chen Tu, Kuohao Fanchiang, and Cheng-Hsien Liu, "Rotary Electrostatic Micromirror Switches Using Wafer-Scale Processing and Assembly," <i>Microsystem Technologies</i> Volume 12, Number 12, October, 2006, pp. 1099-1108 (國科會補助之研究計畫所產生 93-2622-E-007-007-CC3) 6. Cheng-Hsiang Liu, Chia-Fang Chiang, Chieh Chang, and Cheng-Hsien Liu, "A lobster-sniffing inspired actuator for manipulation of micro-objects via controlling local fluid," <i>Sensors and Actuators A: Physical</i>, Volumes A 130-131, 14 August 2006, pp. 545-552 7. Chih-Ming Cheng and Cheng-Hsien Liu, "A Capillary System with 1×4 Micro Flow Switches via a Micronozzle-Diffuser Pump and Hydrophobic-Patch Design for Continuous Liquid Handling," <i>Sensors and Actuators A: Physical</i>, Volumes A 130-131, 14 August 2006, pp. 430-437 8. Chih-Ming Cheng and Cheng-Hsien Liu, "A Capillary System with Thermal-Bubble-Actuated 1×N Micro Fluidic Switches via Time-Sequence Power Control for Continuous Liquid Handling," <i>Journal of MicroElectroMechanical Systems</i>, Vol. 15, n. 2, pp. 296-307, April 2006 (國科會補助之研究計畫所產生 94-2218-E-007-013-)
2007	1. Cheng CM, and Liu CH, "An electrolysis-bubble-actuated micropump based on the roughness gradient design of hydrophobic surface," <i>JOURNAL OF MICROELECTROMECHANICAL SYSTEMS</i> Volume: 16 Issue: 5 Pages: 1095-1105 Published: 2007 2. Shih TC, Chu KH, and Liu CH, "A programmable biochip for the applications of trapping and adaptive multisorting using dielectrophoresis array," <i>JOURNAL OF MICROELECTROMECHANICAL SYSTEMS</i> Volume:16 Issue: 4 Pages: 816-825 Published: 2007
2008	1. Kuo CT, and Liu CH, "A novel microfluidic driver via AC electrokinetics," LAB ON A CHIP Volume: 8 Issue: 5 Pages: 725-733 Published: 2008 2. Yang YS, Lin YH, Hu YC, Liu CH, "Large-displacement thermal actuator designed for MEMS pitch tunable grating," accepted by <i>Journal of Micromechanics and Microengineering</i> and to be published. 3. Ching-Te Kuo and Cheng-Hsien Liu, "A Bubble-Free AC Electrokinetic Micropump Using The Asymmetric Capacitance-Modulated Microelectrode Array for Microfluidic Flow Control," accepted by <i>JOURNAL OF MICROELECTROMECHANICAL SYSTEMS</i> and to be published

葉哲良 教授(J. A. Yeh)

研究計畫—國科會		
年度	計畫名稱	總經費
2006	皮升級蛋白質與胺基酸微全分析系統-子計畫三：超疏水數位微流道、奈米表面加工、微全分析系統整合與封裝(3/3)	1,264,000
	波特蜂-具仿生視覺與飛行應變力之微型安全感測器(2/3)	6,145,000
2007	竹筴魚類推進力學與仿生動力機械研發—子計畫三：魚類仿生視覺研究(1/3)	1,230,000
	產學合作計畫—變倍率液體透鏡之技術開發(1/2)	9,904,000
	波特蜂-具仿生視覺與飛行應變力之微型安全感測器(3/3)	5,945,000
2008	竹筴魚類推進力學與仿生動力機械研發—子計畫三：魚類仿生視覺研究(2/3)	1,207,000
	高比強度與比勁度之太陽光電矽撲翼研究	995,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2006	中美矽晶製品股份有限公司	1
	工研院	1
	新強光電股份有限公司	1
2007	中美矽晶製品股份有限公司	2
	工研院	1
	菱光科技	1
2008	教育部	1
	中美矽晶製品股份有限公司	2
	中科院	1

SCI 論文發表	
年度	論文
2006	1.J. Y. Chyan and J. A. Yeh*, "Development and Characterization of a Broad-Bandwidth Polarization-Insensitive Subwavelength Optical Device," Nanotechnology, vol. 17, no.1, pp. 40-44, January 2006 2.J. Y. Chyan, J. A. Yeh, "Return Loss Reduction of Molded Bonding Wires by Comb Capacitors," IEEE Transactions on Advanced Packaging (TADVP), vol. 29, no.1, pp.98-101, February 2006 3. C. C. Cheng, C. A. Chang , J. A. Yeh, "Variable Focus Dielectric Liquid Droplet Lens," Optics Express, vol. 14, no.9, pp.4101-4106, May 2006 4.J.-T. Yang, J.- H. Chen , K.- J. Huang and J. A. Yeh, "Droplet Manipulation on Hydrophobic Textured Surfaces with Roughened Patterns," IEEE/ASME Journal of Microelectromechanical Systems (JMEMS), vol.15, no. 3, pp. 697-707, June 2006

	5. C. H. Chen, <u>J. A. Yeh</u>, P. J. Wang , “Electrical Breakdown Phenomena for Devices with Micron Separations,” Journal of Micromechanics and Microengineering (JM&M), vol.16 no.7, pp.1366-1373, July 2006 6. C. A. Chang, C.-C. Cheng, and <u>J. A. Yeh</u>, “Analysis and Modeling of Liquid Crystal Tunable Capacitors,” IEEE Transaction of Electronic Devices (TED), vol. 53, no. 7, pp. 1675-1682, July 2006 7. C.-C. Cheng, C. A. Chang , C.- H. Liu and <u>J. A. Yeh</u>, “A Tunable Liquid-Crystal Microlens with Hybrid Alignment in Liquid Crystal,” Journal of Optics A: Pure and Applied Optics (JOptA), vol. 8, pp. 365-369, July 2006 8. M. T.-K. Hou, G. K.-W. Huang, J.-Y. Huang, K.-M. Liao, R. Chen and <u>J. A. Yeh</u>, “Extending Displacements of Comb Drive Actuators by Adding Secondary Comb Electrodes,” J. Micromech. Microeng. (JM&M), vol. 16, , pp. 684-691, April 2006 9. <u>J. A. Yeh</u>, S. S. Jiang and C. Lee, “MOEMS Variable Optical Attenuators using Rotary Comb Drive,” Photonics Technology Letters (PTL), vol. 18, no. 10, pp. 1170-1172, June 2006 10. <u>J. A. Yeh</u>, J. Y. Huang, C. N. Chen , “Design of an Electrostatic Rotary Comb Actuator,” Journal of Microlithography Microfabrication and Microsystems (JM3) 5 (2): Art. No. 023008 Apr-Jun 2006 11. J. -Y. Huang, Y. S. Lu, and <u>J. A. Yeh</u>, “Self-Assembled High NA Microlens Arrays using Global Dielectricphoretic Energy Wells,” Optics Express, vol. 14, no. 22, pp. 10779-10784, Nov. 2006
2007	1.C.-C. Cheng and J. A. Yeh*, “Dielectrically Actuated Liquid Lens,” Optics Express, vol. 15, no. 12, pp. 7140-7145, June 2007 2.C. G. Tsai, C. M. Hsieh and <u>J. A. Yeh</u>*, “Self-alignment of Microchips using Surface Tension and Solid Edge,” Sensors and Actuators A: Physical, vol. 139, pp. 343-349, Sep. 2007 3.Y.-S. Lu, C.-C. Huang, J. A. Yeh, C.-F. Chen, and S. Gwo, “InN-Based Anion Selective Sensors in Solutions,” Applied Physics Letter, 91 (20): Art. No. 202109, Nov. 2007
2008	1.C.-N. Chen, J. Y. Chyan, C. M. Hsieh and <u>J. A. Yeh</u>*, "Nanoparticle-Embedded Actuator Based on Localized Surface Plasmon Resonance," Journal of Optics A: Pure and Applied Optics, 10(4), Art. No. 044007, Apr. 2008 2.C. Jagadish, M. Sasaki and <u>J. A. Yeh</u>, "Selected papers from Optical MEMS and Nanophotonics 2007," Journal of Optics A: Pure and Applied Optics, 10(4), Art. No. 040201, Apr. 2008 3.Y.-S. Lu, C.-L. Ho, <u>J. A. Yeh</u>*, H.-W. Lin and S. Gwo, "Anion Detection Using Ultrathin InN Ion Selective Field Effect Transistors," Applied Physics Letter, 92 (21): Art. No. 212102, May 2008 4.C. Lee and <u>J. A. Yeh</u>*, "Development and evolution of MOEMS technology in variable optical attenuator," Journal of Micro/Nanolithography, MEMS and MOEMS (JM3), 7(2), 021003, 2008 5.M. T.-K. Hou and <u>J. A. Yeh</u>*, "An in-plane rotary comb drive actuator for a variable optical attenuator," Journal of Micro/Nanolithography, MEMS and MOEMS (JM3), 2008

洪健中 教授(C. C. Hong)

研究計畫—國科會

年度	計畫名稱	總經費
2007	應用於現場即時醫療診斷之生醫奈米感測系統晶片研製	638,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2007	長庚醫院	1
	國家奈米元件實驗室	1
2008	長庚醫院	2
	國家奈米元件實驗室	1

SCI 論文發表	
年度	論文
2007	Chien-Chong Hong, Jin-Woo Choi and Chong H. Ahn, "An On-Chip Air-Bursting Detonator for Driving Fluids on Disposable Lab-on-a-Chip Systems," Journal of Micromechanics and Microengineering, 2007, 17, 410-417.

江國寧 教授(K. N. Chiang)

研究計畫—國科會		
年度	計畫名稱	總經費
2006	內含系統式晶圓級封裝之設計，製造與可靠度分析(3/3)	1,006,000
	使用低介電材質銅晶片之先進封裝結構的破壞機制分析研究(2/3)	1,449,000
2007	使用低介電材質銅晶片之先進封裝結構的破壞機制分析研究(3/3)	1,219,000
	微型堆疊式封裝結構之可靠度及散熱分析與設計（1/3）	966,000
2008	微型堆疊式封裝結構之可靠度及散熱分析與設計（2/3）	1,615,000
	以矽穿孔接合式三維晶片極其封裝結構之散熱效能與長時可靠度分析（1/3）	1,141,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2006	育需科技股份有限公司	2
	榮清計畫	1
	台灣積體電路製造股份有限公司	1
2007	台灣積體電路製造股份有限公司	1
	育需科技股份有限公司	2
	行政院原子能委員會核能研究所	1
	工研院	1
	晶元光電股份有限公司	1

2008	行政院原子能委員會核能研究所	1
	工研院	1
	晶元光電股份有限公司	1
	育甯科技股份有限公司	1

SCI 論文發表	
年度	論文
2006	1. K. N. Chiang, C. Y. Chou, and C. J. Wu, and C. A. Yuan, "Prediction of The Bulk Elastic Constant of Metals Using Atomic-Level Single-Lattice Analytical Method," Appl. Phys. Lett. 88, 171904, 2006. 2. K. N. Chiang, C. A. Yuan, C. N. Han, C. Y. Chou and Yujia Cui, "Mechanical Characteristic of ssDNA/dsDNA Molecule Under External Loading," Appl. Phys. Lett., 88, 023902, 2006, also published in the January 23, 2006 issue of Virtual Journal of Nanoscale Science & Technology. 3. K. N. Chiang, Chien Chen Lee, Chang Chun Lee and K. M. Chen, "Current crowding-induced electromigration in SnAg3.0Cu0.5 micro-bumps," Appl. Phys. Lett., 88 072102, 2006. 4. Ming-Chih Yew, Chien-Chia Chiu, Shu-Ming Chang and Kuo-Ning Chiang, "A Novel Crack and Delamination Protection Mechanism for a WLCSP Using Soft Joint Technology," Soldering & Surface Mount Technology, Vol. 18, Issue 3, 2006, pp. 3-13. 5. M. C. Yew, C. Y. Chou, C. S. Huang, W. K. Yang, K. N. Chiang, "The Solder on Rubber (SOR) Interconnection Design and Its Reliability Assessment Based on Shear Strength Test and Finite Element Analysis," Journal of Microelectronics Reliability, Vol. 46, 2006, pp. 1874-1879. 6. K. C. Chang and K. N. Chiang, "Growth Analysis of Interfacial Delamination of Plastic Ball Grid Array Package During Solder Reflow Using Global-Local Finite Element Method," Journal of Strain Analysis for Engineering Design, Vol. 41, No. 1, pp. 19-30, 2006. 7. Liu, C. M., Lee, C. C., Ku, H. T., Chiu, C. C., and Chiang, K. N., "Interconnect Design and Thermal Stress/Strain Analysis of Flip Chip Packaging," Key Engineering Materials, pp.521, 2006. (SCI/EI) 8. Lee, C. C., Ku, H. T., Chiu, C. C., and Chiang, K. N., "A Novel Prediction Technique for Interfacial Crack Growth of Electronic Interconnect," Key Engineering Materials, pp.533, 2006. (SCI/EI) 9. Lee, Chang-Chun, Lee, Chien-Chen, Ku, H. T., Chang, S. M., and Chiang, K. N., "Solder Joints Layout Design and Reliability Enhancements of Wafer Level Packaging Using Response Surface Methodology," Accepted and to be published at Microelectronics Reliability, 2006. (SCI/EI) 10. C. C. Lee, H. C. Liu and K. N. Chiang, "3D Structure Design and Reliability Analysis of Wafer Level Package with Stress Buffer Mechanism," Accepted and to be published at IEEE Transactions on Component and Packaging Technologies, 2006. 11. W. H. Chen, S. R. Lin and K. N. Chiang, "Predicting the Liquid Formation for the Solder Joints in Flip Chip Technology," To be published at ASME Transactions Journal of Electronic Packaging, 2006. 12. C. C. Lee, C. T. Peng, and K. N. Chiang, "Packaging Effect Investigation of CMOS Compatible Pressure Sensor Using Flip Chip and Flex Circuit Board Technologies,"

	Sensors and Actuators Journal A, Vol 126/1, pp 48-55, 2006. 13. Kuo-Ming Chen, J.D. Wu and Kuo-Ning Chiang, "Effects of Pre-Bump Probing and Bumping Processes on Eutectic Solder Bump Electromigration," Microelectronics and Reliability, In Press, Corrected Proof, Available online 28 February 2006. 14. K. M. Chen and K. N. Chiang, "Developing an Analytic Methodology to Accurately Predict Probing Depth in Integrated Circuit Structures," Journal of Electronic Materials, Vol. 35, pp.257-265, 2006. 15. K. C. Chang and K. N. Chiang,, " Growth Analysis of Interfacial Delamination of Plastic Ball Grid Array Package During Solder Reflow Using Global-Local Finite Element Method," To be published at Journal of Strain Analysis for Engineering Design, 2006. 16. C . C., Lee, and K. N. Chiang, "Design and Reliability Analysis of a Novel Wafer Level Package with Stress Buffer Mechanism," Journal of the Chinese Institute of Engineers, Vol. 29, No. 3, pp. 433-443, May 2006. (SCI/EI). 17. K. M. Chen , K. H. Houg, and K. N. Chiang, "Thermal Resistance Analysis and Validation of Flip Chip PBGA Packages," Microelectronics Reliability, Vol. 46, pp. 440-448, 2006. 18. C . T. Peng, C. T. Kuo , K. N. Chiang, Terry Ku, and Kenny Chang, "Experimental Characterization and Mechanical Behavior Analysis of Intermetallic Compounds of Sn-3.5Ag Lead-free Solder Bump with Ti/Cu/Ni UBM Copper Chip," Journal of Microelectronics Reliability, Vol 46/2-4, pp 523-534, 2006
2007	1. Chiu CC, Chang HH, Lee CC, Hsia CC, and Chiang KN, "Reliability of interfacial adhesion in a multi-level copper/low-k interconnect structure," MICROELECTRONICS RELIABILITY Volume: 47 Issue: 9-11 Special Issue: Sp. Iss. SI Pages: 1506-1511 Published: 2007 2. Yew MC, Chou CY, and Chiang KN, "Reliability assessment for solders with a stress buffer layer using ball shear strength test and board-level finite element analysis," MICROELECTRONICS RELIABILITY Volume: 47 Issue: 9-11 Special Issue: Sp. Iss. SI Pages: 1658-1662 Published: 2007 3. Chang SM, Cheng CY, Shen LC, Chiang KN, Hwang YJ, Chen YF, Ko CT, and Chen KC, "A novel design structure for WLCSP with high reliability, low cost, and ease of fabrication," IEEE TRANSACTIONS ON ADVANCED PACKAGING Volume: 30 Issue: 3 Pages: 377-383 Published: 2007 4. Chiu CC, Wu CJ, Peng CT, Chiang KN, Ku T, and Cheng K, "Failure life prediction and factorial design of lead-free flip chip package," JOURNAL OF THE CHINESE INSTITUTE OF ENGINEERS Volume: 30 Issue: 3 Pages: 481-490 Published: 2007 5. Yuan CA, Zhang GQ, Han CN, Chiang KN, and Cui Y, "Numerical simulation on the mechanical characteristics of double-stranded DNA under axial stretching and lateral unzipping," JOURNAL OF APPLIED PHYSICS Volume: 101 Issue: 7 Article Number: 074702 Published: 2007 6. Lee CC, Liu HC, and Chiang KN, "3-D structure design and reliability analysis of wafer level package with stress buffer mechanism," IEEE TRANSACTIONS ON COMPONENTS AND PACKAGING TECHNOLOGIES Volume: 30 Issue: 1 Pages: 110-118 Published: 2007 7. Liu CM, Lee CC, and Chiang KN, "Enhancing the reliability of wafer level packaging hy using solder joints layout design," IEEE TRANSACTIONS ON COMPONENTS AND PACKAGING TECHNOLOGIES Volume: 30 Issue: 1 Pages: 190-190 Published: 2007 8. Lee CC, Lee CC, Ku HT, Chang SM, and Chiang KN, "Solder joints layout design and reliability enhancements of wafer level packaging using response surface methodology," MICROELECTRONICS RELIABILITY Volume: 47 Issue: 2-3 Pages: 196-204 Published:

	2007 9. Lee CC, Chang SM, and Chiang KN, "Sensitivity design of DL-WLCSP using DOE with factorial analysis technology," IEEE TRANSACTIONS ON ADVANCED PACKAGING Volume: 30 Issue: 1 Pages: 44-55 Published: 2007
2008	1. Ku HT、Chiang KN, "The mechanical stress resistance capability of stress buffer structures in analog devices," MICROELECTRONICS RELIABILITY Volume: 48 Issue: 5 Pages: 716-723 Published: MAY 2008 2. Lee CC, Huang TC, Hsia CC, Chiang KN, "Interfacial fracture investigation of low-k packaging using J-integral methodology," IEEE TRANSACTIONS ON ADVANCED PACKAGING Volume: 31 Issue: 1 Pages: 91-99 Published: FEB 2008 3. C. Y. Chou, T. Y. Hung, S. Y. Yang, M. C. Yew, W. K. Yang, and K. N. Chiang, "Solder joint and trace line failure simulation and experimental validation of fan-out type wafer level packaging subjected to drop impact," Microelectronics Reliability, Vol. 48, pp. 1149-1154, 2008. 4. C. C. Lee, T. L. Chou, C. C. Chiu, C. C. Hsia, and K. N. Chiang, "Cracking energy estimation of ultra low-k package using novel prediction approach combined with global-local modeling technique," Microelectronic Engineering, Vol. 85, Issue 10, pp. 2079-2084, 2008.

方維倫 教授(W. L. Fang)

研究計畫—國科會		
年度	計畫名稱	總經費
2006	SOI 之三維微加工製程平台與晶圓級封裝整合技術之開發(2/2)	1,093,000
	微小可穿戴型自發電無線式多重健康訊號感測系統--子計畫三：微機電通用製程平台於多功能感測晶片之應用開發(1/3)	1,077,000
2007	微小可穿戴型自發電無線式多重健康訊號感測系統--子計畫三：微機電通用製程平台於多功能感測晶片之應用開發(2/3)	1,197,000
	三維異質整合影像處理為系統晶片之研發研發-總計畫 (1/3)	1,965,000
	三維異質整合影像處理為系統晶片之研發研發-子計畫一：三維異質整合影像處理為系統晶片之晶片模組製造與測試 (1/3)	1,023,000
2008	微小可穿戴型自發電無線式多重健康訊號感測系統--子計畫三：微機電通用製程平台於多功能感測晶片之應用開發(3/3)	1,186,000
	三維異質整合影像處理為系統晶片之研發研發-總計畫 (2/3)	1,677,000
	三維異質整合影像處理為系統晶片之研發研發-子計畫一：三維異質整合影像處理為系統晶片之晶片模組製造與測試 (2/3)	1,023,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2006	教育部	1
	台達電子工業股份有限公司	1
2007	工研院	3

	原相科技股份有限公司	1
	日月光	1
2008	台灣積體電路製造股份有限公司	1
	鴻海精密工業股份有限公司	1
	工研院	2
	中科院	1

SCI 論文發表	
年度	論文
2006	1. H.-C. Chang, J. M.-L. Tsai, H.-C. Tsai, and W. Fang, 2006, "Design, Fabrication, and Testing of a 3-DOF HARM Micromanipulator on (111) Silicon Substrate," Sensors and Actuators A, Vol 125/2, pp 438-445 (corresponding author). 2. Y.-C. Lin, H. Hocheng, W. Fang, and R.-S. Chen, 2006, "Fabrication and Fatigue Testing of an Electrostatically Driven Microcantilever Beam", Materials and Manufacturing Processes, Vol 21, pp 75-80. 3. D.- H. Tsai , and W. Fang, 2006, "Design and Simulation of a Dual-axis Sensing Decoupled Vibratory Wheel Gyroscope," Sensors and Actuators A, Vol. 126, pp. 33-40 (corresponding author). 4. H.-A. Yang, C.-W. Lin, and W. Fang, 2006, "Wafer Level Self-Assembly of Microstructures Using the Global Magnetic Lifting and Localized Induction Welding," Journal of Micromechanics and Microengineering, Vol. 16, pp. 27-32 (corresponding author). 5. M . Wu, and W. Fang, 2006, "The Molded Surface-micromachining and Bulk Etching Release (MOSBE) Fabrication Platform on (111) Si for MOEMS," Journal of Micromechanics and Microengineering, Vol. 16, pp. 260-265 (corresponding author) 6. L .N. Tsai, Y.T. Cheng, W.-S. Hsu, and W. Fang, 2006, "Ni-carbon Nanotubes Nanocomposite for Robust Microelectromechanical Systems Fabrication," Journal of Vacuum Science Technology B, Vol. 24, pp. 205-210 7. M . Wu, and W. Fang, 2006, "Integrated Bidirectional Focusing and Tracking Actuators in a Monolithic Device for MEMS Optical Pick-up Head," Journal of Micromechanics and Microengineering, Vol. 16, pp. 1290-1297 (corresponding author). 8. H.-A. Yang, C.-W. Lin, C.-Y. Peng, and W. Fang, 2006, "On the Selective Magnetic Induction Heating of Micron Scale Structures," Journal of Micromechanics and Microengineering, Vol. 16, pp. 1314-1320 (corresponding author) 9. M . Wu, S.-Y. Hsiao, C.-Y. Peng, and W. Fang, 2006, "Development of Tracking and Focusing Micro Actuators for Dual-stage Optical Pick-up Head," J. of Optics A, Vol. 8, pp. 323-329 (corresponding author) 10. W.-S. Su, S.-T. Lee, C.-Y. Lin, M.-S. Tsai, and W. Fang, 2006, "Tuning the Shape and Curvature of Micromachined Cantilever Using Multiple Plasma Chemistry Bonding Technology," Sensors and Actuators A, Vol 130/1, pp 553-559 (corresponding author). 11. H.-Y. Chu , T.-Y. Kuo, B. Chang, S.-W. Lu, C.-C. Chiao, and W. Fang, 2006, "Design and Fabrication of Novel Three Dimensional Multi-electrode Array Using SOI Wafer," Sensors and Actuators A, Vol 130/1, pp 254-261 (corresponding author). 12. M . Wu, , H.-Y. Lin, and W. Fang, 2006, "A Poly-Si Based Vertical Comb-drive Two-axis Gimbaled Scanner for Optical Applications," IEEE Journal of Photonics

	Technology Letters, Vol 18, pp 2111-2113 (corresponding author). 13. S.-Y. Lee, H.-W. Tung, W.-C. Chen, and W. Fang, 2006, "Thermal Actuated Solid Tunable Lens," IEEE Journal of Photonics Technology Letters, Vol 18, pp 2191-2193. (corresponding author). 14. C. Wang, H.-H. Yu, M. Wu, and W. Fang, 2006, "Implementation of Phase-Locked Loop Control for MEMS Scanning Mirror Using DSP," Sensors and Actuators A, (accepted, corresponding author). 15. W.-S. Su, S.-T. Lee, C.-Y. Lin, M.-C. Yip, M.-S. Tsai, and W. Fang, 2006, "Control the Shape of Buckling Micromachined Beam Using Plasma Chemistry Bonding Technology," Japanese Journal of Applied Physics, (accepted, corresponding author). 16. W.-M. Shen and W. Fang, 2006, "Design of Curve Arch Structures for Simplified Clutches," JCSME, (accepted, corresponding author). 17. W.-M. Shen and W. Fang, 2006, "Using Dual Belleville Structure to Design a Slip Clutch," ASME J. of Mech. Design, (accepted, corresponding author). 18. W.-S. Su, M.-S. Tsai, and W. Fang, 2006, "A Three Dimensional Micro Fabrication Technology on Highly Structured Surfaces," Electrochemical and Solid-State Letters, (accepted, corresponding author). 19. H.-D. Cheng, S.-Y. Hsiao, M. Wu, and W. Fang, 2006, "Integrated Tracking and Focusing Systems of MEMS Optical Pickup Head," IEEE Trans. on Magnetics, (accepted, corresponding author). 20. J.-H. Lee, S.-T. Lee, C.-M. Yao, and W. Fang, 2006, "Comments on the Size Effect of Microcantilever Quality Factor in Free Air Space," Journal of Micromechanics and Microengineering, (accepted, corresponding author).
2007	1. Hsu CC, Tsou CF, and Fang WL, "Measuring thin film elastic modulus using a micromachined cantilever bending test by nanoindenter," JOURNAL OF MICRO-NANOLITHOGRAPHY MEMS AND MOEMS Volume: 6 Issue: 3 Article Number: 033011 Published: 2007 2. Lee SY, Chen WC, Tung HW, and Fang W, "Microlens with tunable-astigmatism," IEEE PHOTONICS TECHNOLOGY LETTERS Volume: 19 Issue: 17-20 Pages: 1383-1385 Published: 2007 3. Wu M, Lin HY, and Fang W, "Design of novel sequential engagement vertical comb electrodes for analog micromirror," IEEE PHOTONICS TECHNOLOGY LETTERS Volume: 19 Issue: 17-20 Pages: 1586-1588 Published: 2007 4. Yin HL, Huang YC, Fang WL, and Hsieh JW, "A novel electromagnetic elastomer membrane actuator with a semi-embedded coil," SENSORS AND ACTUATORS A-PHYSICAL Volume: 139 Issue: 1-2 Special Issue: Sp. Iss. SI Pages: 194-202 Published: 2007 5. Shen W, and Fang W, "Design of a friction clutch using dual Belleville structures," JOURNAL OF MECHANICAL DESIGN Volume: 129 Issue: 9 Pages: 986-990 Published: 2007 6. Zeng HC, Ho YC, Chen ST, Wu HI, Tung HW, Fang WL, and Chang YC, "Studying the formation of large cell aggregates in patterned neuronal cultures," JOURNAL OF NEUROSCIENCE METHODS Volume: 165 Issue: 1 Pages: 72-82 Published: 2007 7. Wang CW, Tsai MH, Sun CM, and Fang WL, "A novel CMOS out-of-plane accelerometer with fully differential gap-closing capacitance sensing electrodes," JOURNAL OF MICROMECHANICS AND MICROENGINEERING Volume: 17 Issue: 7 Pages: 1275-1280 Published: 2007 8. Tsou CF, Li HC, Lai TH, Hsu CC, and Feng WL, "Bending characterization of

	electroplated nickel microbeams,” SENSORS AND MATERIALS Volume: 19 Issue: 2 Pages: 79-94 Published: 2007 9. Yang HA, Tang TL, Lee ST, and Fang WL, “A novel coilless scanning mirror using eddy current Lorentz force and magnetostatic force,” JOURNAL OF MICROELECTROMECHANICAL SYSTEMS Volume: 16 Issue: 3 Pages: 511-520 Published: 2007 10. Lin CW, Yang HA, Wang WC, and Fang WL, “Implementation of three-dimensional SOI-MEMS wafer-level packaging using through-wafer interconnections,” JOURNAL OF MICROMECHANICS AND MICROENGINEERING Volume: 17 Issue: 6 Pages: 1200-1205 Published: 2007 11. Chiu Y, Chiou JC, Fang WL, Lin YJ, and Wu MC, “Design, fabrication, and control of components in MEMS-based optical pickups,” IEEE TRANSACTIONS ON MAGNETICS Volume: 43 Issue: 2 Special Issue: Part 2 Sp. Iss. SI Pages: 780-784 Part: Part 2 Sp. Iss. SI Published: 2007 12. Wang CW, Yu HH, Wu MC, and Fang WL, “Implementation of phase-locked loop control for MEMS scanning mirror using DSP,” SENSORS AND ACTUATORS A-PHYSICAL Volume: 133 Issue: 1 Pages: 243-249 Published: 2007 13. Lee JH, Lee ST, Yao CM, and Fang WL, “Comments on the size effect on the microcantilever quality factor in free air space,” JOURNAL OF MICROMECHANICS AND MICROENGINEERING Volume: 17 Issue: 1 Pages: 139-146 Published: 2007 14. Lin CM, Chen WC, Fang WL., “Removable fast package technology for MEMS devices using polymer connectors and silicon sockets,” JOURNAL OF MICROMECHANICS AND MICROENGINEERING Volume: 17 Issue: 12 Pages: 2461-2468 Published: DEC 2007
2008	1. Su WS, Huang HY, Fang WL, “Modification of the mechanical properties of SiO₂ thin film using plasma treatments for micro-electro-mechanical systems applications,” JAPANESE JOURNAL OF APPLIED PHYSICS Volume: 47 Issue: 6 Pages: 5242-5247 Part: Part 2 Published: JUN 2008 2. Lee YC, Lin SJ, Buck V, Kunze R, Schmidt H, Lin CY, Fang WL, Lin IN, Lee YC, Lin SJ, Buck V, “Surface acoustic wave properties of natural smooth ultra-nanocrystalline diamond characterized by laser-induced SAW pulse technique,” DIAMOND AND RELATED MATERIALS Volume: 17 Issue: 4-5 Special Issue: Sp. Iss. SI Pages: 446-450 Published: APR-MAY 2008 3. Palnitkar UA, Joseph PT, Niu H, Huang HY, Fang WL, Cheng HF, Tai NH, Lin IN, “Adhesion properties of nitrogen ion implanted ultra-nanocrystalline diamond films on silicon substrate,” DIAMOND AND RELATED MATERIALS Volume: 17 Issue: 4-5 Special Issue: Sp. Iss. SI Pages: 864-867 Published: APR-MAY 2008 4. Sun CM, Wang CW, Fang WL, “On the sensitivity improvement of CMOS capacitive accelerometer,” SENSORS AND ACTUATORS A-PHYSICAL Volume: 141 Issue: 2 Pages: 347-352 Published: FEB 15 2008 5. Chen WC, Yeh PI, Hu CF, Fang WL, “Design and characterization of single-layer step-bridge structure for out-of-plane thermal actuator,” JOURNAL OF MICROELECTROMECHANICAL SYSTEMS Volume: 17 Issue: 1 Pages: 70-77 Published: FEB 2008 6. Wen CC, Fang WL, “Tuning the sensing range and sensitivity of three axes tactile sensors using the polymer composite membrane,” SENSORS AND ACTUATORS A-PHYSICAL Volume: 145 Special Issue: Sp. Iss. SI Pages: 14-22 Published: JUL-AUG 2008 7. Jang BH, Tseng PH, Fang WL, “Characterization of micro-contact properties using a novel micromachined apparatus,” JOURNAL OF MICROMECHANICS AND MICROENGINEERING Volume: 18 Issue: 5 Article Number: 055020 Published: MAY

	2008 8. Hsu WK, Chu HY, Chen TH, Cheng TW, Fang W, “An exceptional bimorph effect and a low quality factor from carbon nanotube-polymer composites,” NANOTECHNOLOGY Volume: 19 Issue: 13 Article Number: 135304 Published: APR 2 2008 9. Lin CW, Hsu CP, Yang HA, Wang WC, Fang W, “ Implementation of silicon-on-glass MEMS devices with embedded through-wafer silicon vias using the glass reflow process for wafer-level packaging and 3D chip integration,” JOURNAL OF MICROMECHANICS AND MICROENGINEERING Volume: 18 Issue: 2 Article Number: 025018 Published: FEB 2008
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衛榮漢 教授(Z. H. Wei)

研究計畫—國科會		
年度	計畫名稱	總經費
2006	奈米磁化結構之微磁特性研究(1/2)	2,168,000
	奈米磁化結構之微磁特性研究(2/2)	945,000
2007	以微觀奈米力學量測研究單一奈微米磁性粒子之磁化過程（1/3）	2,184,000
2008	以微觀奈米力學量測研究單一奈微米磁性粒子之磁化過程（2/3）	1,894,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2006	台灣積體電路股份有限公司(共同主持人)	1
2007	台達電(共同主持人)	1
2008	教育部	1
	中華發展基金管理會	1
	上銀科技股份有限公司	1

SCI 論文發表	
年度	論文
2006	1.Chang YC, Chang CC, Wu JC , <u>Wei ZH</u>, Lai MF, Chang CR, “Probing the magnetization reversal of micro structured permalloy cross by planar Hall measurement and magnetic force microscopy,” IEEE Transactions on Magnetics, 42, no. 10, 2963 (2006) 2. Chang YC, Chang CC, Chang I, Wu JC , <u>Wei ZH</u>, Lai MF, Chang CR, “Investigation of Permalloy cross structure using magnetic force microscope and magnetoresistance measurement”, Journal of Applied Physics 99 (8): Art. No. 08B710 APR 15 2006 3. Jun-Yang Lai, <u>Zung-Hang Wei (corresponding author)</u>, Mei-Feng Lai, Ching-Ray Chang, J. C. Wu, and I. C. Lo, “Metastable state before magnetization reversal in single-domain elongated thin films,” Journal of Applied Physics 99 (8): Art. No. 08G 313 APR 15 2006

2007	1. Chao CT, Lin LK, Wu JC, Wei ZH, Lai MF, and Chang CR, "Short-circuiting effect on the magnetoresistance of microstructured permalloy rings," JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS Volume: 310 Issue: 2 Pages: 1986-1988 Part: Part 3 Published: 2007 2. Hsu JH, Xue ZL, Huang TC, Wei ZH, and Lai MF, "Oscillatory behavior of coercivity in Bi/Co bilayers," JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS Volume: 310 Issue: 2 Pages: 2239-2241 Part: Part 3 Published: 2007 3. Kuo CY, Chung WS, Wu JC, Horng L, Wei ZH, Lai MF, and Chang CR, "Magnetoresistance of microstructured permalloy ellipses having multi-domain configurations," JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS Volume: 310 Issue: 2 Pages: E672-E674 Part: Part 3 Published: 2007 4. Wei ZH, and Lai MF, "Mechanisms of magnetization reversals in elliptical thin films," JOURNAL OF APPLIED PHYSICS Volume: 101 Issue: 9 Article Number: 09F 515 Published: 2007 5. Lai MF, Wei ZH, Wu JC, Shieh WZ, Chang CR, and Guo J, "Field evolution of multivortex and cross-tie states in Permalloy thin films," JOURNAL OF APPLIED PHYSICS Volume: 101 Issue: 9 Article Number: 09N111 Published: 2007
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賴梅鳳 教授(M. F. Lai)

研究計畫—國科會		
年度	計畫名稱	總經費
2006	磁性奈米薄膜之自旋轉移相關效應研究(1/2)	2,068,000
2007	磁性奈米薄膜之自旋轉移相關效應研究(2/2)	883,000
2007	自旋極化電流驅動磁壁運動之溫度相關效應研究(1/3)	2,810,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2006	台灣積體電路公司	1
2008	上銀科技股份有限公司	1
2008	台達電子	1

SCI 論文發表	
年度	論文
2006	1. Jun-Yang Lai, Zung-Hang Wei, Mei-Feng Lai, Ching-Ray Chang, J. C. Wu and I. C. Lo, "Metastable state before magnetization reversal in single-domain elongated thin films," Journal of Applied Physics, 99, 08G 313 (2006)

	2. Y. C. Chang, C. C. Chang, J. C. Wu, Z. H. Wei, M. F. Lai and C. R. Chang, "Probing the Magnetization Reversal of Microstructured Permalloy Cross by Planar Hall Measurement and Magnetic Force Microscopy," IEEE Transactions on Magnetism, 42, no. 10, 2963 (2006) 3. Y. C. Chang, C. C. Chang, Ida Chang, J. C. Wu, Zung-Hang Wei, Mei-Feng Lai, and Ching-Ray Chang, "Investigation of Permalloy cross structure using magnetic force microscope and magnetoresistance measurement," Journal of Applied Physics, 99, 08B710 (2006)
2007	1. Zung-Hang Wei and Mei-Feng Lai, "Mechanisms of magnetization reversals in elliptical thin films," Journal of Applied Physics 101, 09F 515 (2007). 2. Mei-Feng Lai, Zung-Hang Wei, J. C. Wu, W. Z. Shieh, C. R. Chang, and J. Guo, "Field evolution of multivortex and cross-tie states in Permalloy thin films," Journal of Applied Physics 101, 09N111 (2007). 3. C .T. Chao, L.K. Lin, J.C. Wu, Zung-Hang Wei, Mei-Feng Lai, Ching-Ray Chang, "Short-circuiting effect on the magnetoresistance of microstructured permalloy rings," Journal of Magnetism and Magnetic Materials 310, 1986–1988 (2007). 4. C .Y. Kuo, W.S. Chung, J.C. Wu, Lance Horng, Zung-Hang Wei, Mei-Feng Lai, and Ching-Ray Chang, "Magnetoresistance of microstructured permalloy ellipses having multi-domain configurations," Journal of Magnetism and Magnetic Materials 310, e672–e674 (2007). 5. Jen-Hwa Hsu, Zhi-Long Xue, Ta-Chieh Huang, Zung-Hang Wei, and Mei-Feng Lai, "Oscillatory behavior of coercivity in Bi/Co bilayers," Journal of Magnetism and Magnetic Materials 310, 2239–2241 (2007).
2008	1. M. F. Lai, Y. J. Chen, C. N. Liao, T. F. Ho, C. H. San, C. P. Lee, and Y. P. Hsieh, "Field Evolution of Magnetization States with Different Combinations of Vortex Cores and Anti-Vortex Cores in Different Helicities," accepted for publication in IEEE Transactions on Magnetism. 2. M. F. Lai and C. N. Liao, "Size dependence of C and S states in circular and square Permalloy dots," <i>Journal of Applied Physics</i> 103, 07E737 (2008 March) 3. M. F. Lai, C. N. Liao, Z. H. San, C. P. Lee, Y. P. Hsieh, and T. F. Ho, "Dependence of magnetization processes on vortex helicities in Permalloy nanorings," <i>Journal of Applied Physics</i> 103, 07C517 (2008 March).

蔡宏營 教授(H. Y. Tsai)

研究計畫—國科會		
年度	計畫名稱	總經費
2006	奈米針尖鑽石致冷元件製程研發	748,000
	超平坦硬脆晶圓精密輪磨模擬與拋光技術研發	446,000
2007	量子場發射理論應用於散熱/致冷效應之模擬與製程研究	721,000
2008	飛秒雷射製造技術評估	743,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2006	世極企業有限公司	1
	工研院	1
2007	工研院	3
2008	世極企業有限公司	1
	工研院	2

SCI 論文發表	
年度	論文
2006	1. May, P. W., <u>Tsai, H. Y.</u>, Wang, W. N., and Smith, J. A., "Deposition of CVD diamond onto GaN," <i>Diamond and Related Materials</i>, Vol. 15, pp. 526-530, 2006 (SCI IF=1.788) (45/189 MATERIALS SCIENCE, MULTIDISCIPLINARY) 2. Wu, C. C., Horng, R. H., Wu, D. S., Chen, T. N., Ho, S. S., Ting, C. J., and <u>Tsai, H. Y.</u>, "Thinning Technology for Lithium Niobate Wafer by Surface Activated Bonding and Chemical Mechanical Polishing," <i>Japanese Journal of Applied Physics</i>, Vol. 45, No. 4B, part 1, pp. 3822-3827, 2006 (SCI IF=1.247) (50/94 PHYSICS, APPLIED)
2007	1. <u>Tsai, H. Y.</u>, "Characteristics of ZnO Thin Film Deposited by Ion Beam Sputter," <i>Journal of Materials Processing Technology</i>, Vol. 192-193, pp. 55-59, 2007 (SCI IF=0.816) (NSC 94-2218-E-019-003) (12/38 ENGINEERING, MANUFACTURING) 2. Ting, C. J., <u>Tsai, H. Y.</u>, Chou, C. P., Lin, H. Y., Wu, T. C., "Optical Characteristics of Silver Film on the Moth-Eye Structure," <i>Journal of Mechanical Science and Technology</i>, Vol. 21, pp.1752-1755, 2007 (SCI IF=0.215) (NSC 95-2221-E-019-096) (84/107 ENGINEERING, MECHANICAL) 3. Wu, C. W., Tsai, J. R. <u>Tsai, H. Y.</u>, and Hsiao, C. C., "Fabrication of a metal mold with microstructures using a novel passive-alignment recombining technique," <i>Journal of Mechanical Science and Technology</i>, Vol. 21, No. 10, pp. 1498-1504, 2007 (SCI IF=0.215) (84/107 ENGINEERING, MECHANICAL) 4. <u>Tsai, H. Y.</u>, Ting, C. J., and Chou, C. P., "Evaluation research of polishing methods for large area CVD diamond film," <i>Diamond and Related Materials</i>, Vol. 16, pp.253-261, 2007 (SCI IF=1.788) (NSC 94-2218-E-019-003) (45/189 MATERIALS SCIENCE, MULTIDISCIPLINARY)

2008	1. <u>Tsai, H. Y.</u>, "Finite difference time domain analysis of three-dimensional sub-wavelength structured arrays," JAPANESE JOURNAL OF APPLIED PHYSICS Volume: 47 Issue: 6 Pages: 5007-5009 Part: Part 2 Published: JUN 2008 2. <u>Tsai, H. Y.</u>, Kuo, K. L., Wu, C. W., "Study of aluminum film deposition on the surface of micro-trench by dual ion beam sputtering," JAPANESE JOURNAL OF APPLIED PHYSICS Volume: 47 Issue: 6 Pages: 5036-5038 Part: Part 2 Published: JUN 2008 3. Ting, C. J., Huang, M. C., <u>Tsai, H. Y.</u>, Chou, C. P., Fu, C.C., "Low cost fabrication of the large-area anti-reflection films from polymer by nanoimprint/hot-embossing technology," NANOTECHNOLOGY Volume: 19 Issue: 20 Article Number: 205301 Published: MAY 21 2008 4. Pan, C. T., Wu, T. T., <u>Tsai, H. Y.</u>, Chou, M. C., Wu, T. C., "Fabrication of a micro-punching head using LIGA and stacking processes," JOURNAL OF MICROMECHANICS AND MICROENGINEERING Volume: 18 Issue: 9 Article Number: 095012 Published: SEP 2008
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陳政寰教授(C. H. Chen)

研究計畫—國科會		
年度	計畫名稱	總經費
2006	以準分子雷射製造大晶粒低溫多晶矽膜設備研發--子計畫三：製造大晶粒低溫多晶矽膜之準分子雷射光束操控系統設計與分析	795,000
2007	奈米壓印技術應用於製作金屬次微米結構之研究--子計畫三：奈米壓印結構偏及光學元件特性分析與研究	835,000
	提升產業技術及人才培育研究計畫-車用投影式抬頭顯示器之開發	499,000
2008	多元尺度奈微米大面積壓印技術於顯示器之應用-子計畫一：奈微米壓印結構應用於高效率背光模組之研究（1/3）	873,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2006	工研院	3
2007	工研院	3
	創盟科技股份有限公司	1
2008	工研院	1

SCI 論文發表	
年度	論文
2007	Chen CH, Chen CC, and Liang WC, "Light pipe line beam shaper," OPTICAL REVIEW Volume: 14 Issue: 4 Pages: 231-235 Published: 2007
2008	Chen CF, Wang HT, Chen CH, "High throughput reflective light guide for planar illuminator," APPLIED OPTICS Volume: 47 Issue: 6 Pages: 784-791 Published: FEB 20 2008

