

動機系教師研究計畫、論文發表統計表

丙 固力組

陳文華 教授(W. H. Chen)

研究計畫—國科會		
年度	計畫名稱	總經費
2006	金屬奈米線機械性質及介面接著之分子動力學分析(1/3)	1,494,000
	多晶片模組構裝晶片擺置之最適化設計(1/3)	961,000
2007	金屬奈米線機械性質及介面接著之分子動力學分析(2/3)	1,149,000
	多晶片模組構裝晶片擺置之最適化設計(2/3)	857,000
2008	金屬奈米線機械性質及介面接著之分子動力學分析(3/3)	1,092,000
	多晶片模組構裝晶片擺置之最適化設計(3/3)	806,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2006	茂德科技股份有限公司	1

SCI 論文發表	
年度	論文
2006	1.W. H. Chen , S. L. Lin and K. N. Chiang, 2006, "Prediction of Liquid Formation for C4 Type Solder joints in Flip Chip Technology," to appear in ASME Journal of Electronic Packaging Vol. 128, No. 4, pp. 331-339. (SCI/EI) (NSC-90-2212-E007-051 and NSC-91-2212-E007-052)
	2.D. M. Chiang and W. H. Chen , 2006, "Transmission Loss Analysis of Expansion Chamber Mufflers with Mean Flow," Journal of the Chinese Society of Mechanical Engineers, Vol. 28, NO. 1, pp. 3-11. (SCI/EI) (Invited)
2007	1.H. C. Cheng, Y. C. Huang and W. H. Chen , 2007, "A Force-Directed Based Optimization Scheme for Thermal Placement Design of MCMs," IEEE Transactions on Advanced Packaging, Vol. 30, pp. 56-67 (SCI/EI)
	2. W. H. Chen , H. C. Cheng and Y. C. Hsu, 2007, "Mechanical Properties of Carbon Nanotubes using Molecular Dynamics Simulations with the Inlayer van der Waals Interactions," Computer Modeling in Engineering and Sciences, Vol. 20, No.2, pp. 123-145. (SCI/EI)
2008	1. H. C. Cheng, W. H. Chen and H. F. Cheng, 2008, "Theoretical and Experimental Characterization of Heat Dissipation in a Board-level Microelectronic Component," Applied Thermal Engineering, Vol. 28, pp. 575-588 (SCI/EI)

	2. W. H. Chen, H. C. Cheng and Y. L. Liu, 2008, "Effects of Surface and In-layer van der Waals Interaction on Mechanical Properties for Carbon Nanotubes", <i>Advanced Materials Research</i> 33-37, pp. 993-998. (EI) 3. W. H. Chen, H. C. Cheng and I. C. Chung, 2008, "A Response Surface Based Optimization Approach for Thermal Placement Design of Chips in Multiple-Chip Modules", <i>IEEE Transactions on Components and Packaging Technologies</i> (accepted). (SCI/EI) 4. W. H. Chen, H. C. Cheng, Y. C. Hsu, R. H. Uang and J. H. Hsu, 2008, "Mechanical Material Characterization of Co Nanowires and Their Nanocomposite", <i>Composite Science and Technology</i> (accepted). (SCI/EI)
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葉銘泉 教授(M. C. Yip)

研究計畫—國科會		
年度	計畫名稱	總經費
2006	異方性導電膜接合技術之機械性質與可靠度研究(1/3)	986,000
	奈米碳管/酚醛樹脂複合材料受溫濕條件影響之機械與電性質研究(1/3)	736,000
2007	異方性導電膜接合技術之機械性質與可靠度研究(2/3)	1,021,000
	奈米碳管/酚醛樹脂複合材料受溫濕條件影響之機械與電性質研究(2/3)	736,000
2008	異方性導電膜接合技術之機械性質與可靠度研究(3/3)	1,021,000
	奈米碳管/酚醛樹脂複合材料受溫濕條件影響之機械與電性質研究(3/3)	736,000

SCI 論文發表	
年度	論文
2006	1. W. S. Su, S.T. Lee, C.Y. Lin, M. S. Tsai, M. C. Yip, and W. Fang, "Tuning the Shape and Curvature of Micromachined Cantilever Using Multiple Plasma Treatments Technology," <i>Sensors & Actuators: A. Physical</i> , (2006).
	2. Su, Wang Shen, Lee, Sheng Ta; Lin, Cheng Yu; Yip, Ming Chuen; Tsai, Ming Shih; Fang, Weileun, "Control the shape of buckling micromachined beam using plasma chemistry bonding technology," <i>Japanese Journal of Applied Physics, Part 1: Regular Papers and Short Notes and Review Papers</i> , v 45, n 10 B, Oct 21, 2006, pp. 8479-8483.
2007	1. Jen YM, Yip MC, Wei CL, and Shu GC, "Prediction of low-cycle contact fatigue life of sleeve-pin-shaft connections under axial and torsional cyclic loading," <i>INTERNATIONAL JOURNAL OF FATIGUE</i> Volume: 29 Issue: 5 Pages: 796-809, 2007.
	2. Yip, Ming-Chuen and Wu, Hung-Yuan, "Fatigue and electrical properties of CNT/phenolic composites under moisture-temperature effects," <i>Key Engineering Materials</i> , v 334-335 II, 2007, p 769-772.
	3. Yip, Ming-Chuen, Chien, Tsai-Chih and Wang, Kuo-Shu, "Mechanical and electrical

	properties of MWNT/phenolic composites under moisture -temperature effects,” <i>Key Engineering Materials</i> , v 334-335 II, 2007, pp. 765-768.
2008	1. Chung-Lin Wu, Hsueh-Chu Lin, Chien-Hsin Huang, Ming-Chuen Yip and Weileun Fang, “Mechanical Properties of PDMS/CNTs Nanocomposites,” <i>Materials Research Society Symposium Proceeding</i>, Vol. 1056, 2008. 2. Fu-Lung Pan, Chin-Fen Tuan, Sheng-Jui Chen, Weileun Fang and Ming-Chuen Yip, “Measurement Uncertainty of Nano Universal Testing System,” <i>Sensors and Materials</i> (accepted)

王志宏 教授(J. H. Wang)

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--子計畫三：先進超輕車輛之振動，噪音抑制分析與驗證(3/3)	660,000
	高速移動之振動體所產生之聲場理論建立及工程應用(2/3)	688,000
2007	導控尋標器環架與射控雷達機構振頻提昇及軸承資料庫建立技術	499,000
	高速移動之振動體所產生之聲場理論建立及工程應用	803,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2006	友達光電股份有限公司	1
	功學社教育用品股份有限公司	1
2007	大銀微系統股份有限公司	1
	東培工業股份有限公司	1
	工研院	1
	工研院	1
	上銀科技股份有限公司	1
2008	上銀科技股份有限公司	2
	工研院	1
	功學社教育用品股份有限公司	1
	美律實業股份有限公司	1

SCI 論文發表	
年度	論文
2007	1.Tseng SH, Tai NH, Hsu WK, Chen LJ, Wang JH, Chiu CC, Lee CY, Chou LJ, and Leou KC, “Ignition of carbon nanotubes using a photoflash,” <i>CARBON</i> Volume: 45 Issue: 5 Pages: 958-964 Published: 2007

	2.J. H. Wang and H. Y. Huang, "Model and parameters identification of non-linear joint by force-state mapping in frequency domain," Journal of Mechanics, Vol.23 No.4 pp.367-380(2007)
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王偉中 教授(W. C. Wang)

研究計畫—國科會		
年度	計畫名稱	總經費
2006	以混合式數位散射光彈法探討雙層材料之界面應力及應力集中(3/3)	1,270,000
	構件在高頻諧和力作用下之數位動態光黏彈探討(1/3)	1,152,000
2007	構件在高頻諧和力作用下之數位動態光黏彈探討(2/3)	923,000
2008	構件在高頻諧和力作用下之數位動態光黏彈探討(3/3)	923,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2006	教育部	1
2007	教育部	1
	財團法人感恩社會福利基金會	1

SCI 論文發表	
年度	論文
2006	1.Wang, W. C. and Y. H. Tsai , 2006.12, "Time-Averaged Photoelastic Stress Analysis of the Ultrasonic Wave in a Strip," Experimental Mechanics, Vol. 46, No. 6, pp. 757-763, 計畫編號: NSC 92-2212-E007-053 and NSC 93-2212-E007-013
	2.Wei-Chung Wang, Shing Chen, Chun-Hsien Liu and Chun-Yao Ni, 2006. 09, "The Design of a New Ultrasonic Horn for Flip-Chip Bonding," Key Engineering Materials, Vol. 326-328, pp. 505-508.計畫編號： NSC94-2212-E007-007 and Industrial Technology Research Institute project no. C 341AC 12A 0.
	3.Wang, W. C. and Y. H. Tsai , 2006.08, "Digital Dynamic Photoelastic and Numerical Stress Analyses of a Strip," Journal of Vibration and Control, Vol. 12, No. 8, pp. 927-938. 計畫編號: NSC 92-2212-E007-053.
	4.Wang, W. C. and J. S. Hsu, 2006, 05, "Investigation of Analytical Solutions for Bonded Structures by Photomechanical Methods," Journal of the British Society of Strain Measurement, Vol. 42, No. 2, pp. 107-116. 計畫編號： NSC-91-2212-E007-034. SCI, EI.
2008	1. Wang WC, Su CW, Liu PW, "Full-field non-destructive analysis of composite plates," COMPOSITES PART A-APPLIED SCIENCE AND MANUFACTURING Volume: 39 Issue: 8 Pages: 1302-1310 Published: 2008
	2. Wang WC, Ni CY, Tsai YH, "Design of ultrasonic horns by photomechanics methods," STRAIN Volume: 44 Issue: 3 Pages: 248-252 Published: JUN 2008

蔣長榮 教授(C. R. Chiang)

SCI 論文發表	
年度	論文
2006	Chiang, C.R., 2006, "Thermal mismatch stress of a spherical inclusion in a cubic crystal," Int. J. Fracture, Vol.139, pp313-317.
2007	1.Chiang CR and Weng GJ, "Nonlinear behavior and critical state of a penny-shaped dielectric crack in a piezoelectric solid," JOURNAL OF APPLIED MECHANICS-TRANSACTIONS OF THE ASME Volume: 74 Issue: 5 Pages: 852-860 Published: 2007 2.Chiang CR, "Stress concentration around a spherical cavity in a cubic medium," JOURNAL OF STRAIN ANALYSIS FOR ENGINEERING DESIGN Volume: 42 Issue: 3 Pages: 155-162 Published: 2007
2008	Chiang CR, "Thermal mismatch stress of a cylindrical inclusion in a cubic crystal," ENGINEERING FRACTURE MECHANICS Volume: 75 Issue: 8 Pages: 2295-2307 Published: MAY 2008

葉孟考 教授(M. K. Yeh)

研究計畫—國科會		
年度	計畫名稱	總經費
2006	含奈米碳管補強高分子樹脂心材之三明治複材疊層樑動態特性研究	844,000
2007	三維異質整合影像處理為系統晶片之研發研發-子計畫三：三維異質整合影像處理微系統晶片之熱分析與設計（1/3）	887,000
2008	三維異質整合影像處理為系統晶片之研發研發-子計畫三：三維異質整合影像處理微系統晶片之熱分析與設計（2/3）	841,000

研究計畫—業界計畫		
年度	合作廠商	計畫件數
2006	川智股份有限公司	1
2007	教育部	1
2008	教育部	1

SCI 論文發表	
年度	論文
2006	1.Yeh*, M. K., Tai, N. H. and Liu, J. H., 2006, "Mechanical Behavior of Phenolic-based Composites Reinforced with Multi-walled Carbon Nanotubes," Carbon, Vol. 44, No. 1, pp. 1-9 (EI, SCI: IF=3.419) (NSC93-2212-E- 007-047) 2.Yeh*, M. K., and Lee, I. S., 2006, "Delamination Growth in Ball Grid Array Electronic

	Package,” Key Engineering Materials, Vol. 306-308, pp. 363-368 (SCI) (NSC89-2212-E-007-025) 3.Yeh*, M. K., Tai, N. H. and Liu, J. H., 2006, “Dynamic Mechanical Properties of MWNTs/Phenolic Nanocomposites,” Key Engineering Materials, Vol. 306-308, pp.1073-1078 (SCI) (NSC93-2212-E-007-047) 4.Yeh*, M. K., Tai, N. H. and Lin, Y. J., 2006, “Fabrication and Mechanical Properties of MWNTs/Phenolic Nanocomposites,” Materials Science Forum, Vol. 505-507, pp. 121-126 (SCI) (NSC93-2212-E-007-047) 5.Tai*, N. H., Yeh, M. K., Liu, J. H. and Yang, C. H, 2006, “Fabrication and Characterization of Nanocomposites Reinforced by Carbon Nanotubes-(2)Testing of Mechanical Properties,” Key Engineering Materials, Vol. 313, pp. 1-6 (SCI) 6.Chiu*, C. C., Tai, N. H., Yeh, M. K., Chen, B. Y., Tseng, S. H. and Chang, Y. H., 2006, “Tip-to-tip Growth of Aligned Single-walled Carbon Nanotubes under an Electric Field,” Journal of Crystal Growth, Vol. 290, pp. 171-175 (EI, SCI) 7.Yeh*, M. K., Chen, B. Y., Tai, N. H. and Chiu, C. C., 2006, “Force Measurement by AFM Cantilever with Different Coating Layers,” Key Engineering Materials, Vol. 326-328, pp. 377-380 (SCI) (NCS 94-2212-E007-032) 8.Yeh*, M. K. and Tung, K. C., 2006, “Dynamic Instability of Delaminated Composite Plates under Parametric Excitation,” Key Engineering Materials, Vol. 326-328, pp. 1765-1768 (SCI) (NSC93-2212-E-007-047, NSC94-2212-E007-032)
2007	1.Lin MC, Wang C, Chang LH, Yeh MK, and Kao FS, “Effects of structural behavior on electromagnetic resonance frequency of a superconducting radio frequency cavity,” JOURNAL OF MECHANICS Volume: 23 Issue: 3 Pages: 187-196 Published: 2007 2.Chen BY, Yeh MK, and Tai NH, “Accuracy of the spring constant of atomic force microscopy cantilevers by finite element method,” ANALYTICAL CHEMISTRY Volume: 79 Issue: 4 Pages: 1333-1338 Published: 2007
2008	1.Tai NH·Yeh MK·Peng TH, “Experimental study and theoretical analysis on the mechanical properties of SWNTs/phenolic composites,” COMPOSITES PART B-ENGINEERING Volume: 39 Issue: 6 Pages: 926-932 Published: SEP 2008 2.Yeh MK·Hsieh TH·Tai NH, “Fabrication and mechanical properties of multi-walled carbon nanotubes/epoxy nanocomposites,” MATERIALS SCIENCE AND ENGINEERING A-STRUCTURAL MATERIALS PROPERTIES MICROSTRUCTURE AND PROCESSING Volume: 483 Special Issue: Sp. Iss. SI Pages: 289-292 Published: JUN 15 2008 3. Yeh MK·Tai NH·Lin YJ, “Mechanical properties of phenolic-based nanocomposites reinforced by multi-walled carbon nanotubes and carbon fibers,” COMPOSITES PART A-APPLIED SCIENCE AND MANUFACTURING Volume: 39 Issue: 4 Special Issue: Sp. Iss. SI Pages: 677-684 Published: 2008 4. Yeh MK·Huang YL, “Thermal analysis and optimal design of lamp type light-emitting diodes,” JOURNAL OF THE CHINESE INSTITUTE OF ENGINEERS Volume: 31 Issue: 2 Pages: 271-278 Published: MAR 2008

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
	育需科技股份有限公司	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)
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	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 by 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	1,197,000

	機電通用製程平台於多功能感測晶片之應用開發(2/3)	
	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：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

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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
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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

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	- 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) - 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	<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) - 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) - 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) <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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