


## 國防大學理工學院應化及材料學系教師個人資料

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### ※學歷：

院	校	系	所	學位	起迄年月
University of California, Berkeley 美國柏克萊加州大學		EECS 資電系		博士	85/08-89/05
國立交通大學		光電工程 研究所		碩士	81/09-83/06
中正理工學院 79 年班(50 期)		應用物理學系		學士	75/09-79/07

### ※經歷：

中正理工學院應用物理系助教 79/07-81/08  
中正理工學院應用物理系講師 83/07-85/07  
中正理工學院應用物理系系助理 84/01-84/08  
中正理工學院教材科教育行政官 89/09-90/08  
中正理工學院應用物理系副教授 90/09-95/02  
中正理工學院理學部部助理 92/12-93/12  
國防大學理工學院化材系教授 95/02-

### ※研究領域

量子電子學、雷射、半導體元件及材料、太陽能電池、光電元件及材料

### ※教授課程

1. 大學部：普通物理(1)、普通物理(2)
2. 研究所：固態物理、太陽能電池、光電子學、半導體材料及製程、電動力學

## ※期刊發表(Journal papers)：

- N.W. Pu\*, J.M. Shieh, Y. Lai, et al., 1995, Jan., “Starting Dynamics of a CW Passively Mode-locked Picosecond Ti:sapphire/DDI Laser”, Optics Letters **20** (2), pp.163-165. (SCI, EI)
- E. Budiarto\*, N.W. Pu, S. Jeong, and J. Bokor, 1998, Feb., "Near-field Propagation of Terahertz Pulses from a Large Aperture Antenna", Optics Letters **23** (3), pp.213-215.(SCI, EI)
- N.W. Pu\*, S. Jeong, R. Zhao and J. Bokor, 1999, Jan., "Picosecond ultrasonic study of Mo/Si multilayer structures using an alternating pumps technique", Applied Physics Letters **74** (2), pp.320-322. (SCI, EI)
- C.L. Pan\*, N.W. Pu, and J.M. Shieh, 1999, Aug., “Dynamic Pulse Buildup in Continuous-Wave Passively Mode-Locked Picosecond Ti: Sapphire/DDI and Ti: Sapphire/IR140 Lasers”, Chinese Journal of Physics **37** (4), pp.361-379. (SCI)
- N.W. Pu\*, J. Bokor, S. Jeong, and R. Zhao, 1999, Nov/Dec, “Nondestructive picosecond-ultrasonic characterization of Mo/Si extreme ultraviolet reflection coatings”, Journal of Vacuum Science Technology **B17** (6), pp.3014-3018. (SCI, EI)
- N.W. Pu\* and J. Bokor, 2003, Aug., “Study of surface and bulk acoustic phonon excitations in superlattices using picosecond ultrasonics”, Physical Review Letters **91**(7), 076101. (SCI, EI). 計畫編號: NSC 91-2112-M-014-001.
- E.Y. Pan\*, N.W. Pu, Y.P. Tong and H.F. Yau, 2003, Jun., “Scaffold-like micro-well structures fabricated by two-photon-absorption photopolymerization”, Journal of Medical and Biological Engineering **23**(2), pp.79-84. (EI). 計畫編號: NSC 91-2112-M-014-001.
- E.Y. Pan\*, N.W. Pu, Y.P. Tong and H.F. Yau, 2003, Sep., “Fabrication of High-Aspect-Ratio Sub-Diffraction-Limit Microstructures by Two-Photon-Absorbed Photo- polymerization”, Applied Physics **B 77**(5), pp.485-488. (SCI, EI). 計畫編號: NSC 91-2112-M-014-001.
- N.W. Pu\*, E.Y. Pan, and J. Bokor, 2004, Apr., “Sensitive Detection of Laser Damage to Mo/Si Multilayers by Picosecond Ultrasonics”, Applied Physics **B 79**(1), pp.107-112. (SCI, EI). 計畫編號: NSC 92-2112-M-014-002.
- E.Y. Pan\*, N.W. Pu, Y.P. Tong and H.F. Yau, 2005, Nov., “Application of Two-Photon-Absorption Photopolymerization to Micro-Device Fabrication”, Journal of Chung Cheng Institute of Technology, **34**(1), pp.57-74. (EI). 計畫編號: NSC 92-2112-M-014-002.
- T.C. Li\*, N.W. Pu, B.J. Lwo, C.H. Kao, and L.J. Hu, 2006, Feb., “The Effects of Oxygen Partial Pressure on the Acoustic Velocity in Zirconia Films Studied by

Picosecond Ultrasonics”, *Thin Solid Films* **496**(2), pp.208-213. (SCI, EI). 計畫編號: NSC 93-2215-E-014-003、NSC 93-2112-M-014-002.

- N.-W. Pu\*, 2005, Sep., “Ultrafast Excitation and Detection of Acoustic Phonon Modes in Superlattices”, *Phys. Rev. B* **72**, 115428. (SCI, EI). 計畫編號: NSC 93-2215-E-014-003、NSC 93-2112-M-014-002.
- T.C. Li\*, N.W. Pu, B.J. Lwo, E.Y. Pan, and C.H. Kao, 2005, Nov., “Double-Transducer Structure for Picosecond Ultrasound Generation”, *Appl. Phys. Lett.* **87**(20), 201907. (SCI, EI). 計畫編號: NSC 93-2215-E-014-003、NSC 93-2112-M-014-002.
- N.W. Pu\* and T.C. Li, 2006, Mar., “Pulse-echo measurement of longitudinal sound velocity in nanometer thin films”, *Applied Physics B* **82**(3), pp.449-453. (SCI, EI). 計畫編號: NSC 94-2216-E-014-003.
- T.C. Li\*, B.J. Lwo, N.W. Pu, S.P. Yu, and C.H. Kao, 2006, Oct., “The effects of nitrogen partial pressure on the properties of the TaN<sub>x</sub> films deposited by reactive magnetron sputtering”, *Surface and Coatings Technology* **201**(3-4), pp.1031-1036. (SCI, EI). 計畫編號: NSC 93-2215-E-014-003、NSC 93-2112-M-014-002.
- T.C. Li\*, N.W. Pu, B.J. Lwo and C.H. Kao, 2006, Dec. “Study of the Sound Velocities in Nanometer Thin Films Using Picosecond Ultrasonic Techniques”, *Journal of Chung Cheng Institute of Technology* **35**(1), pp. 155-166. (EI). 計畫編號: 95-2221-E-606-020.
- 蒲念文、洪淑宜(2006/10)。「如何打一場不可預測的未來戰爭—培養有思考能力的軍官」, 國防雜誌, 第 21 卷, 第 5 期, 頁 41-47。
- Y.M. Liu, Y. Sung, N.W. Pu, Y.H. Chou, K.C. Yeh, and M.D. Ger\*, 2008, Nov., “Electroless deposition of nickel-phosphorous nano-dots for low-temperature crystallization of amorphous silicon”, *Thin Solid Films* **517**(2), pp.727-730. (SCI, EI). 計畫編號: NSC 95-2221-E-606-020.
- W.I. Kuo, E.Y. Pan, and N.W. Pu\*, 2008, May, “A Study on the Transmission of Picosecond Ultrasonic Waves in Si/Mo Superlattices”, *J. Appl. Phys.* **103**(9), 093533. (SCI, EI). 計畫編號: NSC 95-2221-E-606-020.
- Yu-Hsien Chou, Yuh Sung, Yih-Ming Liu, Nen-Wen Pu, Ming-Der Ger, 2008, Oct., “Defect-Free Copper Filling Using Non-Isothermal Electroless Deposition with Fluorocarbon Surfactant,” *Journal of the Electrochemical Society*, **155**(12), pp.D791-D797. (SCI, EI) 計畫編號: NSC 96-2221-E-606-017.
- Y.H. Chou, Y.M. Liu, Y. Sung, N.W. Pu, M.D. Ger, 2009, Jan., “Amorphous Ni–Mo–P diffusion barrier deposited by non-isothermal deposition,” *Surface & Coatings Technology*, **203**(8), pp.1020–1026. (SCI, EI) 計畫編號: NSC 96-2221-E-606-017.
- H.C. Chang, T.M. Shih, N.Z. Chen, and N.W. Pu, “A microscope system based on

bevel-axial method auto-focus,” Optics and Lasers in Engineering, Available online 6 Dec., 2008. ([doi:10.1016/j.optlaseng.2008.10.004](https://doi.org/10.1016/j.optlaseng.2008.10.004)) (SCI, EI). 計畫編號: NSC 97-2221-E-606-001.

※研討會論文：

- S. Jeong\*, N.W. Pu and J. Bokor, 1998, March 1-5, “Study of Si/Mo multilayer reflector structures using picosecond ultrasonics”, presented at the 4th International Conference on the Physics of X-ray Multilayer Structures in Breckenridge, CO, USA.
- R. Zhao\*, P. Specht, R.C. Lutz, N.W. Pu, S. Jeong, J. Bokor and E.R. Weber, 1998, June 1-5, “Time-resolved reflectivity measurement of thermally stabilized low temperature grown GaAs doped with beryllium”, Proceedings of the 10th Conference on Semiconducting and Insulating Materials (SIMC-X) in Berkeley, CA, USA, pp.130-133. (EI)
- N.W. Pu\*, S. Jeong, R.Zhao and J. Bokor, 1998, December 15-18, "Picosecond ultrasonic study of Mo/Si multilayers using a novel pump-probe scheme", Proceedings of the 1998 International Photonics Conference in Taipei, Taiwan, T-S2-C3, pp.484-486.
- N.W. Pu\*, S. Jeong, R.Zhao and J. Bokor, 1999, 14-19 March, "Nondestructive ultrasonic characterization of Mo/Si EUV multilayers", Proceedings of SPIE conference on Emerging Lithographic Technologies III, Vol. 3676, pp.627-634. (SPIE Microlithography '99, Santa Clara, CA, USA.) (EI)
- N.W. Pu\*, S. Jeong, R.Zhao and J. Bokor, 1999, May 23-28, “A novel alternating-pump technique for picosecond ultrasonic study of Mo/Si multilayers”, Conference on Lasers and Electro-Optics (CLEO/QELS'99), Baltimore, Maryland, USA.
- Nen-Wen Pu\*, Seongtae Jeong, Ri-An Zhao and Jeffrey Bokor, 1999, June 1 - 4, “Nondestructive picosecond-ultrasonic characterization of Mo/Si EUV multilayers”, The 43rd International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), Marco Island, Florida, USA.
- R.Zhao\*, P.Specht, E.R.Weber, N.W.Pu, and J. Bokor, 1999, June30-July 2, “Ultrafast carrier dynamics in Be-doped low temperature grown GaAs studied by double-pulse excitation”, Session X, 41st Electronic Materials Conference, Santa Barbara, CA, USA.
- N.W. Pu\*, S. Jeong, R.Zhao and J. Bokor, 1999, August 2-6, “Nondestructive picosecond ultrasonic characterization of Mo/Si multilayers using a novel pump-probe scheme”, 18th Congress of the International Commission for Optics in San Francisco, California, USA, Proceedings of SPIE, Vol. 3749, pp. 196-197.

**(EI)**

- N.W. Pu\*, S. Jeong and J. Bokor, 1999, October 10-12, “Characterization of Mo/Si EUV multilayer reflection coatings using picosecond ultrasonics”, International Workshop on Extreme Ultraviolet Lithography, Monterey, CA, USA.
- N.W. Pu\* and J. Bokor, 2001, May 6-11, “Experimental and theoretical studies on Mo/Si multilayers for extreme ultraviolet lithography using picosecond ultrasonics”, Conference on Lasers and Electro-Optics (CLEO/QELS 2001), Technical Digest, pp. 441-442, Baltimore, Maryland, USA. **(EI)**
- N.W. Pu, 2003, April 25-26, “Time-resolved study of surface and bulk acoustic phonons in superlattices”, 2003 Symposium on Superlattice Physics and Spintronics, Taipei, Taiwan. 計畫編號: NSC 91-2112-M-014-001.
- N.W. Pu, 2004, April 23-24, “Detection of Laser Damage to Superlattices”, 2004 Symposium on Superlattice Physics and Spintronics, Kaohsiung, Taiwan. 計畫編號: NSC 92-2112-M-014-002.
- T.C. Li, N.W. Pu, B.J. Lwo, C.H. Kao, and L.J. Hu, 2004, Nov. 29 –Dec. 3, “A Study on Thin Film Microstructure and Its Effects on Acoustic Film Velocity Through Picosecond Ultrasonics Technique”, 2004 Materials Research Society Fall Meeting, Boston, MA, USA. 計畫編號: NSC 93-2112-M-014-002. (內容後來收錄於 Materials Research Society Symposium Proceedings Vol.833, *Materials, Intergration and Packaging Issues for High-Frequency Devices II*, 2005, pp.117-122.) **(EI)**
- N.W. Pu, 2005, Feb. 1-3, “Picosecond ultrasonic detection of laser damage to superlattices”, 2005 物理年會, Kaohsiung, Taiwan. 計畫編號: NSC 93-2112-M-014-002. (內容後來收錄於「物理」雙月刊 27 卷 1 期, p.137, Feb. 2005)
- T.C. Li, N.W. Pu, B.J. Lwo, S.P.Yu, and C.H. Kao, 2005, Feb. 1-3, “A Study of Microstructure Effects on Sound Velocity of Thin Film Through Picosecond Ultrasonics Technique”, 2005 物理年會, Kaohsiung, Taiwan. 計畫編號: NSC 93-2112-M-014-002. (內容後來收錄於「物理」雙月刊 27 卷 1 期, p.129, Feb. 2005)
- T.C. Li\*, S.P.Yu, L.Y. Tang, Y.K. Hsiao, N.W. Pu, B.J. Lwo, and C.H. Kao, 2006, Mar. 7-9, “A Study on the Acoustic Properties of the Constituent Films in Solidly Mounted Resonators Using Picosecond Ultrasonic Waves”, 8th Annual International Symposium on Advanced Radio Technologies, Boulder, CO, USA. 計畫編號: NSC 94-2216-E-014-003. (內容收錄於 Proceedings of the 2006 International Symposium on Advanced Radio Technologies, pp.24-28)
- N.W. Pu\* and W. I. Kuo, 2007, July 22-27, “Laser picosecond ultrasonic measurement of longitudinal sound velocity in nanometer thin films”, 34th

Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE), Golden, Colorado. 計畫編號: NSC 95-2221-E-606-020. (內容後來收錄於 American Institute of Physics Proceedings Vol.975, pp.286-293.) (EI)

- T.C. Li\*, N.W. Pu, B.J. Lwo, S.P. Yu, C.H. Kao, T. Sheng, and P.Y. Chen, 2006, Dec. 4-5, “Acoustic Properties of the Constituent Films in Bragg Reflectors Using Picosecond Ultrasonic Waves”, 100<sup>th</sup> Anniversary Conference of Japan Society for the Promotion of Science on Acoustic Wave devices, Taipei, Taiwan. 計畫編號: NSC 95-2221-E-606-020.
- 許勝宏、潘恩亞、蒲念文，2007, Jun. 1, “以雷射刻劃太陽能電池鈾導電薄膜特性之研究”，陸軍官校 83 週年校慶基礎學術研討會，高雄。計畫編號: NSC 95-2221-E-606-020.
- 許勝宏、潘恩亞、鄭凱文、蒲念文，2007, Nov. 29-30, “Q 開關雷射刻劃太陽能電池鈾導電薄膜特性之研究”，第 16 屆國防科技學術研討會，龍潭。計畫編號: NSC 95-2221-E-606-020.
- 李大青、蒲念文、羅本喆，2007, Nov. 29-30, “使用氮化鈾薄膜消除布拉格聲波反射器之寄生電容”，第 16 屆國防科技學術研討會，龍潭。計畫編號: NSC 95-2221-E-606-020.
- 陳品文、林明憲、劉益銘、宋鈺、蒲念文、葛明德，2007, Nov. 29-30, “SiO<sub>2</sub> 緩衝層對於化學氣相沉積法成長奈米碳管之影響”，第 16 屆國防科技學術研討會，龍潭。計畫編號: NSC 95-2221-E-606-020.
- 林智耕、郭維義、潘恩亞、蒲念文，2007, Nov. 29-30, “雷射引燃 Zr/KClO<sub>4</sub> 點火藥之研究”，第 16 屆國防科技學術研討會，龍潭。計畫編號: NSC 95-2221-E-606-020.
- 李勝義、陳松安、蒲念文，”中共衛星科技應用於戰場的技術能量研析”，97 年「國防事務專案研究暨戰略學術研討會」論文集，第 217-234 頁，八德。
- C.A. Wang, N.W. Pu, Y. Sung, Y.M. Liu, M.D. Ger, 2008, Nov. 20-22, “Stable dispersion of graphene nanosheets in aqueous surfactant solution”, 2008 Taiwan/Korea/Japan ChE Conference and 55<sup>th</sup> TwIChE annual conference, Taipei. 計畫編號: NSC 97-2221-E-606-001.
- C.A. Wang, N.W. Pu, Y. Sung, Y.M. Liu, M.D. Ger, 2008, Oct., 27-30, “Dispersion and coating of graphene nanosheets on FR4 circuit boards”, 21st International Microprocesses and Nanotechnology Conference, Fukuoka, Japan. 計畫編號: NSC 97-2221-E-606-001.
- C.A. Wang, N.W. Pu, Y. Sung, Y.M. Liu, M.D. Ger, 2008, May, 11-14, “Preparing the Conductive Graphene Sheet by Chemical Reaction Method” ACEC2008 6th Asian Conference on Electrochemistry, Taipei, Taiwan. 計畫編號: NSC 97-2221-E-606-001.
- 王崇安，蒲念文，劉益銘，宋鈺，葛明德，2008，Nov. 21-22，”石墨奈米薄

片的分散與導電性的量測”，2008 中國材料科學學會年會，台北。計畫編號: NSC 97-2221-E-606-001.

- 林明憲，劉益銘，宋鈺，蒲念文，葛明德，2008，Nov. 21-22，”以化學置換法製備鈮金屬觸媒成長奈米碳螺旋線圈”，2008 中國材料科學學會年會，台北。計畫編號: NSC 97-2221-E-606-002.
- 林明憲，顏子鈞，劉益銘，宋鈺，蒲念文，葛明德，2008，Nov. 21-22，”以非均溫化學析鍍法製備 Ni-P 合金觸媒成長奈米碳螺旋線圈之研究”，2008 中國材料科學學會年會，台北。計畫編號: NSC 97-2221-E-606-002.
- 林明憲，顏子鈞，劉益銘，宋鈺，蒲念文，葛明德，2008，Nov. 21-22，”以單晶氧化鎂蒸鍍鎳觸媒成長高品質奈米碳管之研究”，2008 中國材料科學學會年會，台北。計畫編號: NSC 97-2221-E-606-002.
- 林世樂，熊治勇，白清源，葉東昇，蒲念文，2008，Nov. 21-22，”藍寶石單晶在 3~5 $\mu$ m 中紅外線穿透率改良之研究”，2008 中國材料科學學會年會，台北。計畫編號: NSC 97-2221-E-606-002.

#### ※專書及專書論文：

- Nen-Wen Pu, 2000, May 20, “Picosecond Ultrasonic Characterization of Mo/Si Multilayers for Extreme Ultraviolet Lithography”, Ph.D. Thesis at University of California, Berkeley, USA. (博士論文)

#### ※其它服務

1. 國科會計畫「雷射皮秒超音波術應用於奈米級薄膜之聲學及熱學性質研究」主持人 (2003/8/1 ~ 2004/7/31)，NSC-92-2112-M-014-002。
2. 國科會計畫「超晶格及奈米薄膜表面聲子及體聲子模態之研究」主持人 (2004/8/1 ~ 2005/7/31)，NSC-93-2112-M-014-002。
3. 國科會計畫「薄膜鑲嵌式諧振器反射層之聲波特性評估及研製」共同主持人 (2004/8/1 ~ 2005/7/31)，NSC-93-2215-E-014-003。
4. 國科會計畫「以皮秒超音術分析布拉格聲波鏡及壓電薄膜之聲波傳遞及機械特性研究」主持人 (2005/8/1 ~ 2006/7/31)，NSC-94-2216-E-014-003。
5. 國科會計畫「以材料製程優化及直接聲波量測改良射頻鑲嵌式振盪器之聲波反射薄膜」主持人 (2006/8/1 ~ 2007/7/31)，NSC-95-2221-E-606-020。
6. 國科會計畫「利用超臨界流體法大量製備石墨奈米薄片之研究(I)」主持人 (2008/8/1 ~ 2009/7/31)，NSC-97-2221-E-606-001。