

郭茂坤 個人簡歷

1. 個人資料：

辦公室： 320 室

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現職： 台大應力所 教授

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2. 學歷：

1984： (美國) 西北大學博士 (土木系)

1979、1977： 臺灣大學碩士、學士 (土木系)

3. 獲獎：

2012 台大特聘教授

2012, 2004 台大教學傑出獎；

1987, 1999, 2003, 2009 台大教學優良獎；1987 教育部教學傑出獎

4. 專長：

奈米金屬結構光學特性、固體力學分析及模擬

5. 研究興趣：奈米光電以及相關的奈米力學 (擬收學生數 2 人)

(a) 金屬奈米結構之電漿子光調變 (Plasmon-Induced Optical Modulation of Metallic Nanostructures) (計算)

利用 MMP/FEM/BEM 計算特定金屬奈米結構在入射光照射下，產生的電漿子共振對光的調變行為，例如：光子軌道角動量的產生

(b) 金屬奈米結構之電漿子光力學 (Plasmon-enhanced Optomechanics of Metallic Nanostructures) (計算)

利用 MMP/FEM/BEM 計算特定金屬奈米結構在入射光照射下，產生的電漿子共振增強光對周遭奈米粒子的捕捉行為

(c) 奈米氣泡的量測 (Measurement of Nanobubbles) (實驗)

利用脈衝雷射在金奈米粒子水溶液中產生奈米氣泡，因金奈米粒子的電漿子共振對光的吸收，將光能轉成熱能造成局部氣泡，再以超音波探頭及光學系統量測其行為

6. 研究成果目錄：

- (1) J.-W. Liaw*, G. Liu, Y.-C. Ku, M. K. Kuo*, 2020, Plasmon-enhanced photothermal and optomechanical deformations of a gold nanoparticle, *Nanomaterials*, **10**, 181.
- (2) J. W. Liaw*, M. C. Huang, C. W. Huang, Y. C. Ku, M. K. Kuo*, 2019, Light-driven self-organization of gold clusters by linearly polarized Gaussian beam, *Journal of Quantitative Spectroscopy & Radiative Transfer*, **233**, 35–41.
- (3) J. W. Liaw*, M. C. Huang, H. Y. Chao, M. K. Kuo*, 2018, Spin and orbital rotation of plasmonic dimer driven by circularly polarized light, *Nanoscale Research Letters*, **13**, 322.
- (4) J. W. Liaw*, C. W. Chien, K. C. Liu, Y. C. Ku, M. K. Kuo*, 2018, 3D optical vortex trapping of plasmonic nanostructure, *Scientific Reports*, **8**, 12673.

- (5) J. W. Liaw*, C. W. Huang, M. C. Huang, M. K. Kuo*, Plasmon-enhanced optical bending and heating on V-shaped deformation of gold nanorod, 2018, Applied Physics A- Materials Science & Processing **124**, 17
- (6) J. W. Liaw*, H. Y. Chao, C. W. Huang, M. K. Kuo*, 2018, Light-driven self-assembly of hetero-shaped gold nanorods, Applied Physics A-Materials Science & Processing **124**, 16
- (7) J. W. Liaw*, W. C. Lin and M. K. Kuo*, 2017, Wavelength-Dependent Plasmon-Mediated Coalescence of Two Gold Nanorods, Scientific Reports, **7**, 46095.
- (8) D. J. Y. Feng, Y. J. Lin, Y. C. Ku, H. Y. Jhang, T. R. Lin, and M. K. Kuo*, 2017, GaAsSb spacer effect in quasi-type-II InAs coupled-QDs for intraband absorption enhancement, Optical Materials Express, **7**, 1351-1364.
- (9) J. W. Liaw*, Y. S. Chen, M. K. Kuo*, 2016, Spinning gold nanoparticles driven by circularly polarized light, Journal of Quantitative Spectroscopy & Radiative Transfer, **175**, 46–53.
- (10) J. W. Liaw*, Y. S. Chen, M. K. Kuo*, 2016, Maxwell stress induced optical torque upon gold prolate nanospheroid, (invited paper) Applied Physics A - Materials Science & Processing, **122**: 182
- (11) J. W. Liaw*, H. Y. Wu, C. C. Huang and M. K. Kuo*, 2016, Metal-enhanced fluorescence of silver island associated with silver nanoparticle, Nanoscale Research Letters **11**:26.
- (12) J. W. Liaw*, T. Y. Kuo, M. K. Kuo*, 2016, Plasmon-mediated binding forces on gold or silver homodimer and heterodimer, Journal of Quantitative Spectroscopy & Radiative Transfer, **170**, 150–158.