

# Chih-Huang Lai

**Dean, College of Engineering, National Tsing Hua University**

## Education

04/1997 **Ph.D**, Materials Science and Engineering, Stanford University

06/1993 **MS**, Materials Science and Engineering, Stanford University

06/1988 **BS**, Materials Science and Engineering, National Tsing Hua University

## Professional Experience

08/2016~present, Dean, College of Engineering, National Tsing Hua University (NTHU)

02/2016~07/2016, Acting Dean, College of Engineering, National Tsing Hua University (NTHU)

08/2015~01/2016, Associate Dean, College of Engineering, National Tsing Hua University (NTHU)

06/2014~present, *President* of Taiwan Association for Magnetic Technology

08/2012~07/2015, *Chair*, Department of Materials Science and Engineering, NTHU

08/2005~present, *Professor*, Department of Materials Science and Engineering, NTHU

11/2008~07/2012, *CEO* of Engineering Industrial Liaison Program, NTHU

04/2008~present, *Member of Editorial board*, Asia Materials (Nature Publisher)

08/2003~07/2006 *Associate Chair*, Department of Materials Science and Engineering, NTHU

02/2002~07/2005 *Associate Professor*, Department of Materials Science and Engineering, NTHU

02/1998~01/2002 *Assistant Professor*, Department of Materials Science and Engineering, NTHU

01/1997~02/1998 *Senior R&D Engineer*, Read-Rite Co., U.S. A.

## Awards and Honors

2014 *Fellow, MRS-T (Materials Research Society-Taiwan)*

2014 *Tsing Hua Chair Professor*

2014 *Outstanding Research Award, Ministry of Science and Technology (MOST), Taiwan*

2012 *Y. Z. Hsu Technology Invention Award*

2011 *Outstanding Research Award, Taiwan Association for Magnetic Technology*

2010 *Outstanding Research Award, National Science Council, Taiwan*

2010 *Outstanding Industry-University Collaboration Award, National Tsing Hua University, Taiwan*

2009 *Outstanding Teaching Award, National Tsing Hua University, Taiwan*

2009 *Outstanding Research Award, Taiwan Information Storage Association, Taiwan*

2002 *Wu Ta-Yu Young Researcher Award, National Science Council, Taiwan*

## Service:

**IEEE Magnetic Society:** *Membership Chair 2009-2010*    *Publicity Chair 2011-2012*

*Education Chair 2015-2016*    *Taipei Chapter Chair 2014-*

*Publication Co-Chair, InterMag 2011*    *Program Co-Chair, MMM 2016*

## Taiwan Association for Magnetic Technology (TAMT)

*President 2014-2016*    *Vice president 2012-2014*

**Research Field** : CIGS thin film solar cells, FePt and recording media, Spintronics devices

**Total 205 papers (>3500 citations), 34 patents, more than 100 invited talks**

### Representative papers for magnetic films:

1. L. W. Wang, C. F. Cheng, J. W. Liao, C.Y. Wang, D. S. Wang, K. F. Huang, T. Y. Lin, R. M. Ho, L. J. Chen, and **C. H. Lai\***, “Thermal dewetting with a chemically heterogeneous nano-template for self-assembled L1 0 FePt nanoparticle arrays”, *Nanoscale*, **8**, 3926 (2016)
2. A. Useinov, L. X. Ye, N.Kh. Useinov, T.H. Wu , **C. H. Lai\***, “Anomalous tunnel magnetoresistance and spin transfer torque in magnetic tunnel junctions with embedded nanoparticles” *Scientific Reports*, **5**, 18026 (2015)
3. K. F. Huang, J. W. Liao, C. Y. Hsieh, L. W. Wang, Y. C. Huang, W. C. Wen, M. T. Chang, S. C. Lo, J. Yuan, H. H. Lin and **C. H. Lai\***, “Magnetic patterning: local manipulation of the intergranular exchange coupling via grain boundary engineering”, *Scientific Reports* **5**, 11904 (2015)
4. S. C. Liao, Y. L. Chen, W. C. Kuo, J. Cheung, W. C. Wang, X. Cheng, Y. Y. Chin, Y. Z. Chen, H. J. Liu, H. J. Lin, C. T. Chen, J. Y. Juang, Y. L. Chueh, V. Nagarajan, Y. H. Chu, and **C. H. Lai\***. Self-Assembled Epitaxial Core–Shell Nanocrystals with Tunable Magnetic Anisotropy. *Small*. (2015)
5. J. W. Liao, U. Atxitia, R. F. L. Evans, R.W. Chantrell, and **C. H. Lai\***, “Atomistic modeling of magnetization reversal modes in L1(0) FePt nanodots with magnetically soft edges”, *Physical Review B*, **90**,174415(2014)
6. D. S. Wang, S. Y. Lai, T. Y. Lin, C. W. Chien, D. Ellsworth, L. W. Wang, J. W. Liao, L. Lu, Y. H. Wang, M. Z. Wu, and **C. H. Lai\***, “High thermal stability and low Gilbert damping constant of CoFeB/MgO bilayer with perpendicular magnetic anisotropy by Al capping and rapid thermal annealing”, *Applied Physics Letters*, **104**,142402 (2014)

### Representative papers for solar cells

1. T. H. Yeh, C. H. Hsu, W. H. Ho, S. Y. Wei, C. H. Cai and **C. H. Lai\*** ”An ammonia-free chemical-bath-deposited ZnS (O, OH) buffer layer for flexible Cu (In, Ga) Se<sub>2</sub> solar cell application: an eco-friendly approach to achieving improved stability” *Green Chem.*,**18**, 5212 (2016)
2. S. Y. Wei, Y. C. Liao, C. H. Hsu, C. H. Cai, W. C. Huang, M. C. Huang and **C. H. Lai\***, “Achieving high efficiency Cu<sub>2</sub>ZnSn (S, Se)<sub>4</sub> solar cells by non-toxic aqueous ink: Defect analysis and electrical modeling” *Nano Energy*, **26**, 74 (2016)
3. T. Y. Lin, C. H. Chen, W. C. Huang, W. H. Ho, Y. H. Wu and **C. H. Lai\***, “Direct probing Se spatial distribution in Cu(In<sub>x</sub>Ga<sub>1-x</sub>)Se<sub>2</sub> solar cells: A key factor to achieve high efficiency Performance” *Nano Energy*, **19**, 269 (2016)
4. W. H. Ho, C. H. Hsu, T. H. Yeh, Y. H. Chang, S. Y. Wei. T.Y. Lin and **C. H. Lai\***, “Room-temperature chemical solution treatment for flexible ZnS (O, OH)/Cu (In, Ga) Se<sub>2</sub> solar cell: improvements in interface properties and metastability”, *ACS Appl. Mat. Interfaces*, **8** (10), 6709 (2016)
5. C. H. Hsu, Y. S. Su, S. Y. Wei, C. H. Chen, W. H. Ho, C. Chang, Y. H. Wu, C. J. Lin, **C. H. Lai\*** “Na-induced efficiency boost for Se-deficient Cu(In,Ga)Se<sub>2</sub> solar cells” *Progress in Photovoltaics: Research and Applications* , **23**, 1621 (2015)
6. C. H. Chen, W. C. Shih, C. Y. Chien, C. H. Hsu, Y. H. Wu, and **C. H. Lai\***, “A promising sputtering route for one-step fabrication of chalcopyrite phase Cu(In,Ga)Se<sub>2</sub> absorbers without extra Se supply”, *Solar Energy Materials and Solar Cells*, **103**, 25 (2012)