

## Winson Chun-Hsin Kuo

---

Materials Characterization Facility, Texas A&M University

Rm 152, 1617 Research Parkway (3471 TAMU), College Station, TX 77845

979-862-9182 / [winsonkuo@tamu.edu](mailto:winsonkuo@tamu.edu)

### EXPERIENCES

---

**Lecturer**, Materials Science & Engineering, Texas A&M University, TX, USA, 2016-present

**Scientist**, Materials Characterization Facility, Texas A&M Engineer Experiment Station, College Station, TX, USA, 2015 to present

**Honorary Research Fellow**, Wolfson Catalysis Centre, University of Oxford, Oxford, UK, 2013 to present

**Senior Scientist in Electron Microscopy**, Johnson Matthey Technology Centre, UK, 2012 to 2015

**East Asia Application Scientist**, Oxford Instruments NanoAnalysis, Singapore, 2010-2012

**Process Engineer**, ProMOS Technologies Inc., Hsinchu, Taiwan, 2004-2005

**Associate Researcher**, Industrial Technology Research Institute, Hsinchu, Taiwan, 2003-2004

**Research Associate**, Lite-On Technology Corporation, Keelung Taiwan, 2001-2002

**Research Associate**, National Precision Device Program at National Taiwan Ocean University, Keelung Taiwan, 2001-2003

### EDUCATION

---

**University of Birmingham**, Birmingham, United Kingdom, 2010

**Ph. D., Metallurgy and Materials**

**National Taiwan Ocean University**, Keelung, Taiwan, 2003

**M.S., Material Science**

### PROFESSIONAL MEMBERSHIPS

---

- **Microscopy Society of America**, Member, 2016-present
- **Royal Microscopy Society, Fellow**, 2016-present (member since 2012)
- **Institute of Physics**, Member, 2012-present
- **Midlands Microanalysis Users Group, UK**, Regional Committee Member, 2005-present

### RESEARCH INTERESTS AND EXPERIENCES

---

- Nanomaterials Characterization, HR Electron Microscopy
- Manufacture of metallic alloy through powder metallurgy and casting technique
- Development of process route for semiconductor device, metallic thin film and magnetic materials
- X-ray Microanalysis (EDX, WDX and EBSD) in Electron Microscope (SEM and TEM)
- Mechanical property studies on nano-scale structures of thin film metallic glasses
- Instrumental development of PVD technique on UHV system

### CERTIFICATES

---

- **Gatan EELS & EFTEM Analysis Training School**, Gatan UK, Warwick, UK, 09/2015
- **Bruker Nano Analysis EDS User School**, Bruker Nano Analytics Division, Berlin, Germany 06/2013
- **Wave Service, Installation & Application**, Oxford Instruments NanoAnalysis, High Wycombe, UK, 08/2011
- **Aztec EDS and EBSD Installation & Application**, Oxford Instruments NanoAnalysis, High Wycombe, UK, 07/2011
- **INCA x-stream and INCA mics hardware, Applications, INCA X-sight LN2**, Oxford Instruments NanoAnalysis, High Wycombe, UK, 02/2011
- **HKL Service and Installation**, Oxford Instruments NanoAnalysis, High Wycombe, UK, 11/2010
- **VLSI Training Course-Advanced Processing for VLSI Technology**, National Nano Device Laboratories, Hsinchu, Taiwan, 07/2002

## HONORS AND AWARDS

---

- **Fellow (Elected)**, Royal Microscopy Society, 2016- present
- **Honorary Research Fellowship (Elected)**, Wolfson Catalysis Centre, University of Oxford, Oxford, UK, 2013-present
- **Member (Elected)**, Institute of Physics, Member, 2012-present
- **Examiner (Elected)**, OCR (Oxford, Cambridge and RSA Examinations) Recognising Achievement (Creditor Number: 41881), 2007 to present
- **Dean Scholarship**, Metallurgy and Materials, University of Birmingham, 2008-2010
- **Short-listed (Elected)**, the British Council's International Student Awards with a Shine Certificate, 2008

## TEACHING EXPERIENCE

---

**Examiner / Moderator in Science**, OCR Recognising Achievement, U.K., 2007-present

- Examining, marking, moderation and external verification

**Teaching Assistant**, Electron Microscope Centre, University of Birmingham, U.K., 2006-2010

- Electron Microscope practical training courses for postgraduate students (SEM/EDX/WDX).

**Teaching Assistant**, Metallurgy and Materials, University of Birmingham, U.K., 2006-2010

- Optical Microscope practical courses for undergraduate students

## TECHNICAL SKILLS

---

- Expert in HREM ((S)TEM / SEM), Cs-(S)TEM, Optical microscopy and Spectroscopy
- Expert in a range of TEM/SEM sample preparation (Dual Beam FIB with Manipulator)
- Expert in EPMA (EDX, WDX and EBSD) practical analyses
- Expert in X-ray diffraction (XRD) and atomic force microscopy (AFM) analyses
- Expert in 2D, 3D Engineering Graphic (e.g., Corel Draw, Auto Cad, and Photoshop)
- Familiar with programming language (e.g., OriginLab, Delta Graph, Visual Basic 6.0, CASINO simulation, Crystal Marker, Crystal Diffract and Single Crystal)

## UNITED STATE PATENT

---

U.S. Patent Pending 10/898,240 Annealing-induced extensive solid-state amorphization in metallic films (2008)

## PUBLICAIONS

---

- Yuan Yue, Daniel Juarez-Robles, Yan Chen, Lian Ma, Winson C. H. Kuo, Partha Mukherjee, and Hong Liang “**Hierarchical Structured Cu/Ni/TiO<sub>2</sub> Nanocomposites as Electrodes for Lithium-Ion Batteries**”, ACS Appl. Mater. Interfaces, 9 (34), pp 28695–28703, 2017
- Shei Sia Su, Winson C. H. Kuo, Homero Castaneda “**Comparison of Atmospheric Corrosion and Laboratory Testing of Zn and Zn Alloyed Coated Steel**”, NACE 2018
- Sichuang Xue; Winson C. H. Kuo; Qiang Li; Jie Ding; Ruizhe Su; Haiyan Wang, “**The microstructure and mechanical strength of nanotwinned Al with different textures**”, Acta Materialia 2017 (In submission)
- Shei Sia Su, Cengiz Yegin, Winson Chun-Hsin Kuo, Mustafa Akbulut, Homero Castaneda “**Corrosion behavior of Boron Nitride Nanosheet reinforced Copper Matrix Composite Coatings**”, TMS 2017, Feb. 2017 (Accepted)
- Guoliang Liu, Alex W. Robertson, Molly Meng-Jung Li, Winson C. H. Kuo, Matthew T. Darby, Mohamad Muhieddine, Yung-Chang Lin, Kazu Suenaga, Michail Stamatakis, Jamie H. Warner, Shik Chi Edman Tsang, “**Single Co atom doped MoS<sub>2</sub> monolayer catalyst for hydro-deoxygenation reaction**” Nature Chemistry, 2017
- Yao Zhao, Niancai Peng, Xueyong Yao Zhao, Niancai Peng, Xueyong Wei, Zhuangde Jiang, Winson Chun Hsin Kuo, “**Synthesis of ZnS Urchin-like Nanostructures for Electrochemical Determination of Uric Acid**”, IEEE Sensor, Oct. 2016, FL, USA
- Molly Meng-Jung Li, Jianwei Zheng, Jin Qu, Fenglin Liao, Elizabeth Raine, Winson C. H. Kuo, Shei Sia Su, Pang Po, Youzhu Yuan & Shik Chi Edman Tsang “**The remarkable activity and stability of a highly dispersive beta-brass Cu-Zn catalyst for the production of ethylene glycol**” Scientific Reports, 2016
- Chun Wong, Aaron Chan, Abdul Hanif Mahadi, Molly Meng-Jung Li, Elena Cristina Corbos, Chiu Tang, Glenn Jones, Winson C. H. Kuo, James Cookson, Peter Trenton Bishop and Shik Chi Edman Tsang, “**Interstitial Modification of Palladium Nanoparticles with Boron Atoms as a New Alternative Green Catalyst for Ultra-selective Hydrogenation Reactions**” Nature Comm, 2015
- Simon Jones, Simon M. Fairclough, Maxwell Gordon-Brown, Weiran Zheng, Amy Kolpin, Bo Pang, Winson C. H. Kuo, Jason M. Smith and Shik Chi Edman Tsang, “**Dual Doping Effects (Site Blockage and Electronic Promotion) Imposed by Adatoms on Pd Nanocrystals for Catalytic Hydrogen Production**”, ChemComm 2014
- S. S. Su, I.T.H. Chang, W. C. H. Kuo, D. Price, Z. Pikramenou and J. Lead, “**Pulsed Electrical Discharge Synthesis of Red Photoluminescence Zinc Oxide Nanoparticles**”, Journal of Nanoparticles Research, 2014
- Winson C. H. Kuo, Martha Briceno and Dogan Ozkaya, “**Characterisation of Catalysts Using Secondary and Backscattered Electron In-lens Detectors**”, *Platinum Metals Rev.*, **58**, (2), 106–110, (2014).
- S. S. Su, I. T. H. Chang, W. C. H. Kuo, “**Effects of processing conditions on the sintering response of hypereutectic Al–Si–Cu–Mg P/M alloys**”, *Materials Chemistry and Physics*, Vol. 139 (2-3), pp 775-782 (2013).
- N. Rowlands, S. Bhadarc and C. H. Kuo, “**A Large Area Silicon Drift Detector for use in Analytical Transmission Electron Microscopy**”, Proceedings of the 28<sup>th</sup> MST Annual Conference, Chiang Rai, Thailand, 5-7 January (2011).
- J. P. Chu, C. T. Liu, T. Mahalingam, S. F. Wang, M. J. O’Keefe, B. Johnson, and C. H. Kuo “**Annealing-induced full amorphization in a multicomponent metallic film**”, *PHYSICAL REVIEW B* **69**, 113410 (2004).
- C. Y. Kevin Shieh, S. W. Chu, and C.H. Kuo, “**The Improvement of Low-Reynolds Number Turbulence Model in Compressible**”, Proceedings of the Seventh National Conference on Computational Fluid Dynamics, Pingtung, Taiwan (2000).

## PUBLICATIONS IN SUBMISSION AND PREPARATION

---

- S. S. Su, I.T.H. Chang, C. H. Kuo, “**Effect of Cu and Ni additions on Al-Si-Mg Alloys**”
- S. Adrwish, C. H. Kuo, M. Zakotnik, I.R. Harris and A.J. Williams, “**The effect of adding heavy rare earth hydride on magnetic properties of NdFeB –type sintered magnets using appropriate heat treatment**”
- C. H. Kuo, I. P. Jones, I. R. Harris and A. J. Williams, “**The microstructure and magnetic properties improvement of Zr/ZrB<sub>2</sub> in Nd<sub>2</sub>Fe<sub>14</sub>B**”

## PRESENTATIONS (\*: Invited )

---

### *Plenary Presentations*

- \*Winson C. H. Kuo “Electron Microscopy Characterisation: Eyes for Small Details”, Material Science and Engineering, Texas A&M University, College Station, TX, 10<sup>th</sup> November 2014
- \*C. H. Kuo, “**Characterisation Of Catalysts Using Secondary And Backscattered Electron In-lens Detectors**”, MIDSEM User’s Meeting, Metallurgy and Materials, University of Birmingham, UK, 26<sup>th</sup> Jun 2013
- \*C. H. Kuo, “**The limitation of Electron probe Micro Analysis**”, National Taiwan University of Science and Technology, Taiwan, 7<sup>th</sup> March 2012
- \*C. H. Kuo, “**Electron Probe Micro Analysis- from Crust to Core**”, Cross Straight Microscopy Workshop, National Cheng Kung University, 19<sup>th</sup>-25<sup>th</sup> Nov 2011, Taiwan
- \*H. S. Ubhi, D. Tatham, H. Jiang, C. H. Kuo, “**In-situ EBSD Heating Study of a Folded Stainless Steel**”, IUMAS-V/ALC , Sung Kyun Kwan University, 23<sup>rd</sup> -27<sup>th</sup> May 2011, Seoul, Korea
- \*C. H. Kuo, “**A Large Area Silicon Drift Detector for use in Analytical Transmission Electron Microscopy**”, Proceedings of the 28<sup>th</sup> MST Annual Conference, 5-7 January 2011, Chiang Rai, Thailand

### *Workshop Talks*

- \*Winson C. H. Kuo, “**An introduction to SEM-EDX and its applications**”, SEM-EDX Workshop, Material Characterisation Facility, Texas A&M University, USA, 17<sup>th</sup> May 2016
- \*Winson C. H. Kuo, “**An introduction to EBSD and its applications**”, EBSD Workshop, Material Characterisation Facility, Texas A&M University, USA, 8<sup>th</sup> April 2016
- \*C. H. Kuo, “**Electron Probe Micro Analysis in Electron Microscopy**”, Zeiss Singapore Opening Workshop at Nanyang Technological University, Singapore, 11<sup>th</sup> January 2012
- \*C. H. Kuo, “**An Introduction to EDS and EBSD**”, Electron Microscopy Workshop at Department of Material Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan, 8-9<sup>th</sup> December, 2011
- \*C. H. Kuo, “**An Introduction to both EDS and EBSD**”, Workshop on Electron Microscopy for Material Science Research, University of Putra Malaysia, 14<sup>th</sup>-17<sup>th</sup> June 2011, Malaysia
- \*C. H. Kuo, “**Electron Back-Scatter Diffraction in the Scanning Electron Microscope-An introduction into the method and its applications**”, EDS/EBSD Workshop at Sung Kyun Kwan University, 30<sup>th</sup> -31<sup>st</sup> May 2011, Seoul, Korea
- \*C. H. Kuo, “**Spotlight on the Advantage of HKL EBSD system**”, EBSD Workshop in Sung Kyun Kwan University, 25<sup>th</sup>-26<sup>th</sup> January 2011, Seoul, Korea
- \*C.H. Kuo “**The Principal and Applications of EBSD Technology**”, Work shop training course at National Cheng Kung University, Taiwan, 9/12/2010
- \*C.H. Kuo “**The Applications of EDX and EBSD**”, Workshop training course at Nanyang Technological University, Singapore, 16/11/2010