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Current Position

Assistant Professor, **Materials Science and Engineering** 08/2011 – Present
National Cheng Kung University (NCKU), Tainan, Taiwan

Education

Ph.D., **Chemical Engineering**
National Tsing Hua University (NTHU), Hsinchu, Taiwan
Advisor: Prof. Sinn-wen Chen

B.S., **Chemical Engineering**
National Tsing Hua University (NTHU), Hsinchu, Taiwan

Publications/Presentations/Patents/Awards

- **17** publications in refereed scientific journals, **28** presentations at scientific and industrial conferences, **1** ROC patent, and **1** book/chapter.
- Over **10** *international* and *national* scientific research/fellowship/presentation awards and honors.

Professional Experience

Research Associate 10/2009 – 7/2011
Department of Materials Science and Engineering,
University of Wisconsin-Madison, Madison, Wisconsin, USA

Researcher 03/2007 – 01/2008
Department of Materials Science and Engineering,
Pennsylvania State University, University Park, Pennsylvania, USA

Visiting Scholar 07/2006 – 09/2006
The Institute of Industrial and Scientific Research (ISIR),
Osaka University, Ibaraki, Osaka, Japan

Awards & Honors

1. Stiftelse för Tillämpad Termodynamik (STT) Grant (March **2011**)

   Stiftelse för Tillämpad Termodynamik (Foundation for Applied Thermodynamics), Sweden

2. Postdoctoral Research Abroad Program Scholarship (December **2008**)

   National Science Council (NSC), Taiwan

3. PCB Outstanding Thesis Award-Merit Prize (October **2007**)

   Taiwan Printed Circuit Association (TPCA), Taiwan

4. Editors' Choice Articles in 2007/2008 (August **2007**)

   Journal of Electronic Materials, Springer Boston, USA

   - Roughly top 4% of papers published in *J. Electron. Mater.*

5. Outstanding Student Paper Award-Graduate Division, 1st place (March **2007**)

   The Minerals, Metals & Materials Society (TMS), USA

6. Graduate Student Study Abroad Program Scholarship (December **2006**)

   National Science Council (NSC), Taiwan

7. PCB Outstanding Thesis Award-Gold Medal (October **2006**)

   Taiwan Printed Circuit Association (TPCA), Taiwan

8. Young Researcher Exchanging Program Scholarship (July **2006**)

   Interchange Association, Japan

9. President Y.-S. Kao Research Scholarship (December **2005**)

   President Y.-S. Kao Foundation, Taiwan

   - Mr. Y.-S. Kao is the founder of Eternal Chemical Co. Ltd.

10. Oral/Poster Presentation Awards

    College of Engineering, National Tsing Hua University, Hsinchu, Taiwan

    - Oral Division: Merit Prize (May **2006**)
    - Post Division: 3rd Place (May **2006**)

    Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan

    - Oral Division: 3rd Place (April **2006**), Merit Prize (April **2005**/April **2004**)
    - Post Division: 1st Place (April **2006**), 6th Place (April **2005**)

11. Qualify Examinations

    Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan

    - Transport Phenomena, 1st Place (June **2004**)
    - Chemical Engineering Thermodynamics, 1st Place (January **2004**)

Publications

1. **S.-K. Lin**, B. Puchala, Y.-L. Lee and D. Morgan, "*Ab initio* energetics of charge compensating point defects: a case study on MgO," *Comp. Mater. Sci.*, submitted, **(2012)**.
2. S.-W. Chen, A.-R. Zi, W. Gierlotka, C.-F. Yang, C.-H. Wang, S.-K. Lin, and C.-M. Hsu, "Phase equilibria of Sn-Sb-Cu system," *Mater. Chem. Phys.* **132**, 703-715 **(2012)**.
3. **S.-K. Lin**, K.-D. Chen, H. Chen, W.-K. Liou and Y.-W. Yen, "Abnormal spalling phenomena in the Sn-0.7Cu/Au/Ni/SUS304 interfacial reactions," *J. Mater. Res.* **25**, 2278-2286 **(2010)**.
4. S.-W. Chen, C.-M. Hsu, Y.-C. Huang, **S.-K. Lin**, C.-M. Chen and K.-W. Pan, "Wetting, interfacial reaction, phase equilibria and solidification of multicomponent systems in Pb-free soldering materials (Sn-Ag-Cu-Ni, Sn-In-Cu-Ni and Sn-In-Ag-Ni)," (in Chinese), *Eng. Sci. Technol. Bull.* **109**, 65 **(2010)**.
5. **S.-K. Lin**, T.-Y. Chung, S.-W. Chen and C.-H. Chang, "250 ^{o}C Isothermal Section of the Ternary Sn-In-Cu Phase Equilibria," *J. Mater. Res.* **24**, 2628-2637 **(2009)**.
6. M. A. Miller, **S.-K. Lin** and S. E. Mohney, "V/Al/V/Ag Contacts to n-GaN and n-Al0.58Ga0.42N," *J. Appl. Phys.* **104**, 064508 **(2008)**.
7. **S.-K. Lin**, C.-F. Yang, S.-H. Wu and S.-W. Chen, "Liquidus Projection and Solidification of the Sn-In-Cu Ternary Alloys," *J. Electron. Mater.* **37**, 498-506 **(2008)**.
8. **S.-K. Lin**, Y. Yorikado, J.-X. Jiang, K.-S. Kim, K. Suganuma, S.-W. Chen, M. Tsujimoto, I. Yanada, "Microstructure Development of Mechanical Deformation-induced Sn Whiskers," *J. Electron. Mater.* **36**, 1732-1734 **(2007)**.
9. W. Gierlotka, S.-W. Chen and **S.-K. Lin**, "Thermodynamic Description of the Cu-Sn System," *J. Mater. Res.* **22**, 3158-3165 **(2007)**.
10. **S.-K. Lin**, Y. Yorikado, J.-X. Jiang, K.-S. Kim, K. Suganuma, S.-W. Chen, M. Tsujimoto, I. Yanada, "Mechanical Deformation-induced Sn Whiskers Growth on Electroplated Films in the Advanced Flexible Electronic Packaging," *J. Mater. Res.* **22**, 1975-1986 **(2007)**.
11. S.-W. Chen, C.-H. Wang, **S.-K. Lin**, C.-N. Chiu and C.-C. Chen, "Phase Transformation and Microstructural Evolution in Solder Joints," *JOM* **59**, 39-43 **(2007)**.
12. S.-W. Chen, C.-H. Wang, **S.-K. Lin** and C.-N. Chiu, "Phase Diagrams of Pb-Free Solders and their Related Materials Systems," *J. Mater. Sci. Mater. Electron.* **18**, 19-37 **(2007)**.
13. S.-W. Chen and **S.-K. Lin**, "Electric Current-induced Abnormal Cu/γ-$InSn_4$ Interfacial Reactions," *J. Mater. Res.* **21**, 3065-3071 **(2006)**.
14. **S.-K. Lin** and S.-W. Chen, "Interfacial Reactions in the Sn-20at%In/Cu and Sn-20at%In/Ni Couples at 160°C," *J. Mater. Res.* **21**, 1712-1717 **(2006)**.
15. S.-W. Chen and **S.-K. Lin**, "Effects of Temperature on Interfacial Reactions in the γ-$InSn_4$/Ni Couples," *J. Mater. Res.* **21**, 1161-1166 **(2006)**.
16. S-W. Chen, **S.-K. Lin** and C.-F. Yang, "Interfacial Reactions in the Pb-free Composite Solders with Indium Layers," *J. Electron. Mater.* **35**, 72-75 **(2006)**.
17. S.-W. Chen, **S.-K. Lin** and C.-Y. Chou, "Investigation of Reactive Wetting," (in Chinese), *J. Chin. Colloid & Interface Soc.* **26**, 83-88 **(2004)**.
18. S.-W. Chen, **S.-K. Lin** and J.-M. Jao, "Electromigration Effects upon Interfacial Reactions in the Flip-chip Solder Joints," *Mater. Trans., JIM* **45**, 661-665 **(2004)**.

Presentations

1. C.-L. Cho and **S.-K. Lin**, "Interfacial reactions in the Cu/Ga/Cu sandwich joints," 142nd TMS Annual Meeting & Exhibition (TMS 2013), San Antonio, Taxes, USA. (Accepted, March **2013**)
2. C.-K. Yeh and **S.-K. Lin**, "Supersaturation and phase stability of Pb-Sn alloys under current stressing," 142nd TMS Annual Meeting & Exhibition (TMS 2013), San Antonio, Taxes, USA. (Accepted, March **2013**)
3. B.-H. Hsu and S.-K. Lin, "Interfacial reactions between Au-Ge eutectic solders and Cu substrates," 142nd TMS Annual Meeting & Exhibition (TMS 2013), San Antonio, Taxes, USA. (Accepted, March **2013**)
4. C.-K. Yeh and **S.-K. Lin**, "Ab initio-aided CALPHAD modeling of phase stability under electric current stressing," *2012 Materials Research Society-Taiwan Annual Meeting (MRS-T 2003)*, Yunlin, Taiwan. (Accepted, November **2012**)
5. C.-L. Cho and **S.-K. Lin**, "Novel Ga-based Cu-to-Cu interconnection in 3D IC technology," *International Microsystems, Packaging, Assembly and Circuits Technology Conference 2012 (iMPACT 2012)*, Taipei, Taiwan. (Accept, October **2012**)
6. B.-H. Hsu and **S.-K. Lin**, "Soldering reactions between Au-Ge high temperature Pb-free solder and Cu substrate," *International Microsystems, Packaging, Assembly and Circuits Technology Conference 2012 (iMPACT 2012)*, Taipei, Taiwan. (Accept, October **2012**)
7. B. Puchala, **S.-K. Lin**, L. Wang, and D. Morgan, "PEMFC Nanoparticle Dealloying from Kinetic Monte Carlo Simulations," *Pacific RIM Meeting on Electrochemical and Solid-state Science (PRiME 2012)*, Honolulu, HI, USA. (Accepted, October **2012**)
8. **S.-K. Lin**, B. Puchala, Y.-L. Lee, and D. Morgan, "Ab initio energetics of charge compensating point defects," *International Union of Materials Research Society - International Conference on Electronic Materials (IUMRS-ICEM 2012)*, Yokohama, Kanagawa, Japan. (Accepted, September **2012**)
9. D. Morgan, Y.-L. Lee, B. Puchala, L. Wang, and **S.-K. Lin**, "Atomistic-Based Approaches for Modeling Activity and Degradation in Fuel Cell Catalysts," *American Chemical Society Fall Meeting (ACS 244th meeting)*, Philadelphia, PA, USA. (August **2012**)
10. B. Puchala, **S.-K. Lin**, L. Wang, D. Morgan, "Kinetic Monte Carlo Simulations of Pt1-xCox Nanoparticle Catalyst Dealloying," *11st Spring Meeting of the International Society of Electrochemistry*, Washington, DC, USA. (May **2012**)
11. **S.-K. Lin** and S.-W. Chen, "Phase equilibria and solidification of ternary Sn-In-Cu alloys," 141st TMS Annual Meeting & Exhibition (TMS 2012), Orlando, Florida, USA. (March **2012**)
12. **S.-K. Lin** and D. Morgan, "Full compound energy formalism CALPHAD modeling coupled with first principle calculation for ionic materials," *CALPHAD XL*, Rio de Janeiro, Brazil. (May **2011**)
13. **S.-K. Lin** and D. Morgan, "*Ab initio* aided CALPHAD thermodynamic modeling of Ionic Systems: Application to $La_{1-y}MnO_{3\pm\delta}$," *140th TMS Annual Meeting & Exhibition (TMS 2011)*, San Diego, California, USA. (February **2011**)
14. **S.-K. Lin**, D. Morgan and Y.-L. Lee, "*Ab initio* energetics of charge compensating point defects: a case study on MgO," *Materials Science & Technology 2010 (MS&T 2010)*, Houston, Texas, USA. (October **2010**)
15. **S.-K. Lin** (presenter) and S.-W. Chen, "Liquation Phenomena in the Sn-In/Ni Interfacial Reactions," *136th TMS Annual Meeting & Exhibition (TMS 2007)*, Orlando, Florida, USA. (February **2007**)
16. **S.-K. Lin** (poster), Y. Yorikado, J.-X. Jiang, K.-S. Kim, K. Suganuma and Sinn-wen Chen, "Mechanical Deformation-induced Sn Whisker Formation and Microstructure Development in Electroplated Films," *136th TMS Annual Meeting & Exhibition (TMS 2007)*, Orlando, Florida, USA. (February **2007**)

17. **S.-K. Lin** (poster) and S.-W. Chen, “A Mechanism Study on Sn Whisker Growth on Electroplated Finishes in Advanced Flexible Electronic Packaging,” (in Chinese), *53rd Taiwan Institute of Chemical Engineers Annual Meeting (TwIChE 2006)*, Kaohsiung, Taiwan. (November **2006**)
18. **S.-K. Lin** (poster), Y. Yorikado, K.-S. Kim, K. Suganuma, S.-W. Chen, M. Tsujimoto and I. Yanada, “Sn Whiskers Growth on Electroplated Lead-free Solder Finish for Advanced Flexible Electronic Packaging”, *2006 Sanken International Symposium on Nanoscience and Nanotechnology (SISNN-2006)*, Osaka, Japan. (September **2006**)
19. **S.-K. Lin** (presenter) and S.-W. Chen, “Liquidus Projection and Solidification of the Sn-In-Cu Ternary Alloys,” *2006 International Microelectronic and Packaging Society-Taiwan (IMAPS-Taiwan 2006)*, Taipei, Taiwan. (June **2006**)
20. Y.-C. Huang, S.-W. Chen, **S.-K. Lin** (poster), C.-H. Chang and J.-C. Wu, “Heat Treatment of the Thermal Spray Objects,” *135th TMS Annual Meeting & Exhibition*, San Antonio, Texas, USA. (March **2006**)
21. **S.-K. Lin** (poster) and S.-W. Chen, “Electromigration-induced High Reactive Diffusion Path in Sn-In/Cu Joints,” *135th TMS Annual Meeting & Exhibition (TMS 2006)*, San Antonio, Texas, USA. (March **2006**)
22. **S.-K. Lin** (presenter) and S.-W. Chen, “Current Direction Effects upon Interfacial Reactions in the Sn-In/Cu Joints,” *135th TMS Annual Meeting & Exhibition (TMS 2006)*, San Antonio, Texas, USA. (March **2006**)
23. **S.-K. Lin** (presenter) and S.-W. Chen, “Electric Current Direction Effects upon the In-Sn/Cu Interfacial Reactions,” (in Chinese), *2005 Materials Research Society-Taiwan Annual Meeting (MRS-T 2005)*, Taipei, Taiwan. (November **2005**).
24. **S.-K. Lin** (presenter) and S.-W. Chen, “Temperature Effect upon the In-Sn/Ni Solid Interfacial Reactions,” (in Chinese), *52nd Taiwan Institute of Chemical Engineers Annual Meeting (TwIChE 2005)*, Miaoli, Taiwan. (November **2005**)
25. **S.-K. Lin**, T.-Y. Chung, C.-F. Yang (presenter) and S.-W. Chen, “Interfacial Reactions in the Sn-20at.%In/Cu Couples and Phase Equilibria of In-Sn-Cu Ternary System,” *2005 International Microelectronic and Packaging Society-Taiwan (IMAPS-Taiwan 2005)*, Taipei, Taiwan. (June **2005**)
26. **S.-K. Lin** (presenter), M. Marin and S.-W. Chen, “Interfacial Reactions in the In-Sn/Cu and In-Sn/Ni Couples,” (in Chinese), *51st Taiwan Institute of Chemical Engineers Annual Meeting (TwIChE 2004)*, Tainan, Taiwan. (November **2004**)
27. **S.-K. Lin** (presenter) and S.-W. Chen, “Electromigration Effect upon the Sn/Cu/Ni/Sn/Cu/Sn Interfacial Reactions,” (in Chinese), *2003 Materials Research Society-Taiwan Annual Meeting (MRS-T 2003)*, Tainan, Taiwan. (November **2003**)
28. W. Gierlotka (presenter), S.-W. Chen and **S.-K. Lin**, "Theromodynamic Modeling of Cu-In-Sn Ternary System," *138th TMS Annual Meeting & Exhibition (TMS 2009)*, San Francisco, California, USA. (February **2009**)
29. S.-W. Chen (presenter), S.-H. D. Wong, C.-M. Hsu, C.-H. Wang, **S.-K. Lin** and Y.-C. Huang, “Effects of Electromigration on Interfacial Reactions,” *136th TMS Annual Meeting & Exhibition (TMS 2007)*, Orlando, Florida, USA. (February **2007**)
30. S.-W. Chen (presenter), C.-N. Chiu, **S.-K. Lin**, C.-H. Wang and C.-F Yang, “Interfacial Reactions and Phase Diagrams of Pb-Free Solders and Related Materials Systems,” *136th TMS Annual Meeting & Exhibition (TMS 2007)*, Orlando, Florida, USA. (February **2007**)
31. S.-W. Chen (presenter), **S.-K. Lin**, C.-N. Chiu and Y.-C. Huang, "Electromigration Effects upon Interfacial Reactions in the Pb-free Solder Joints," *2006 International Conference on Chemical and Molecular Technologies*, Tainan, Taiwan. (December **2006**)

32. S.-W. Chen (presenter), C.-N. Chiu, C.-H. Wang, **S.-K. Lin** and C.-C. Chen, "Interfacial Reactions and Phase Diagrams in the Pb-free Solder Joints," (in Chinese), *2006 Materials Research Society-Taiwan Annual Meeting (MRS-T 2006)*, Tainan, Taiwan. (November **2006**)
33. S.-W. Chen (presenter), C.-H. Wang, **S.-K. Lin** and C.-C. Chen, "Electric Current Effects upon Interfacial Reactions in the Electronic Products," (in Chinese), *52nd Taiwan Institute of Chemical Engineers Annual Meeting (TwIChE 2005)*, Miaoli, Taiwan. (November **2005**)
34. S.-W. Chen (presenter), **S.-K. Lin** and C.-F. Yang, "Interfacial Reactions in the Pb-free Composite Solders with Indium Layers," *134th TMS Annual Meeting & Exhibition (TMS 2005)*, San Francisco, California, USA. (March **2005**)
35. S.-W. Chen (presenter), C.-H. Wang, C.-C. Chen and **S.-K. Lin**, "Electric Current Effects upon Interfacial Reactions in the Solder Joints," *SEMICON Korea 2005*, Seoul, Korea, (February **2005**).
36. S.-W. Chen (presenter), **S.-K. Lin** and C.-F. Yang, "Lead-free Composite Solder with an Indium layer," *2004 Materials Research Society-Taiwan Annual Meeting (MRS-T 2004)*, Hsinchu, Taiwan. (November **2004**)

Patents

1. S.-W. Chen, **S.-K. Lin**, C.-F. Yang, Y.-C. Huang, T.-Y. Chung, Y.-M. Tsia, and A.-R. Zi, "Soldering method and joints made by lead-free Sn-In solder," **2006**, R. O. C. (Taiwan) patent I238095.

Books/Chapters

1. S.-W. Chen, G. Gierlotka, H.-J. Wu, and **S.-K. Lin**, "Phase diagram and their applications in Pb-free soldering," in "Lead-free Solders: Materials Reliability for Electronics", Wiley, **2012**.