Vice President and Professor Dr. Jau-Shiung Fang

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No. 64, Wenhua Road, Huwei Township, Yunlin County 632, Taiwan

Education：

Ph.D. in Materials Science and Engineering, National Tsing Hua University

Current Position：

Professor, Department of Materials Science and Engineering, and Vice President, National Formosa University

Experience：

- Secratary general, National Formosa University (Aug.2023-Jul.2024)
- Head ,Department of Materials Science and Engineering, National Formosa University (Feb 2021 - Jan 2023)
- Visiting Scholar, Department of Electronic Physics, Tel Aviv University, Israel (Jul 2016 - Oct 2016)
- Dean of Academic Affairs, National Formosa University (Aug 2012 - Jul 2013)
- Dean of Research and Development, National Formosa University (Feb 2012 - Jul 2012)
- Director of Research Center, National Formosa University (Oct 2010 - Jan 2012)
- Visiting Scholar, Department of Materials and Metallurgy, University of Cambridge, UK (Aug 2009 - Jul 2010)
- Head, Department of Materials Science and Engineering, National Formosa University (Feb 2004 - Jan 2009)
- Professional Engineer, Technology Development Department, United Microelectronics Corporation (Sep 1997 - Jul 2000)

Specialties：

- Thin Film Manufacturing Technology
- Semiconductor Processing
- Microelectronic Materials
- Flat Panel Display Processing
- Thin Film Solar Cell Components
- Optoelectronic Devices
- Nano Magnetic Materials
- Magnetoresistive Thin Film Materials

Completed Projects：

1. **Ministry of Science and Technology**
   August 1, 2019 - July 31, 2020
   Comprehensive Self-Barrier Copper Alloy Conductors and Porous Dielectric Materials and Process Integration (II) - Subproject II: Comprehensive Self-Barrier Electrochemical Atomic Layer Deposition of Copper Alloy Conductors and Porous Dielectric Integration (II) (MOST107-2221-E150-002-MY2)
2. **Ministry of Science and Technology**
   August 1, 2018 - July 31, 2020
   Comprehensive Self-Barrier Copper Alloy Conductors and Porous Dielectric Materials and Process Integration (II) - Subproject II: Comprehensive Self-Barrier Electrochemical Atomic Layer Deposition of Copper Alloy Conductors and Porous Dielectric Integration (II) (MOST107-2221-E150-002-MY2)
3. **Ministry of Science and Technology**
   August 1, 2017 - July 31, 2018
   Preparation and Performance Study of Colored Chromium Nitride Solar Thermal Absorbers (MOST106-2221-E150-053)
4. **Ministry of Science and Technology**
   August 1, 2017 - July 31, 2018
   Comprehensive Self-Barrier Copper Conductors and High-Porosity Dielectric Materials and Process Integration - Subproject II: Comprehensive Self-Barrier Electrochemical Atomic Layer Deposition of Copper Conductors and High-Porosity Dielectric Integration (MOST106-2221-E150-010)
5. **Ministry of Science and Technology**
   August 1, 2016 - July 31, 2017
   Comprehensive Integration of Porous Dielectric and Ultra-Fine Copper Conductor Imprinting Processes (II) - Subproject II: Electrochemical Atomic Layer Deposition Dual Reinforcement of Porous Dielectric and Ultra-Fine Copper Conductor Engineering (II) (MOST104-2221-E150-005-MY2)
6. **National Science Council**
   August 1, 2015 - July 31, 2016
   Comprehensive Integration of Porous Dielectric and Ultra-Fine Copper Conductor Imprinting Processes (II) - Subproject II: Electrochemical Atomic Layer Deposition Dual Reinforcement of Porous Dielectric and Ultra-Fine Copper Conductor Engineering (II) (MOST104-2221-E150-005-MY2)
7. **National Science Council**
   August 1, 2015 - July 31, 2016

Optical Properties and Thermal Stability of Aluminum and Silicon Nitride-Based Multi-Chromium Nitride Solar Absorbers (MOST104-2221-E150-066)

8. **National Science Council**
   August 1, 2014 - July 31, 2015
   Comprehensive Integration of Porous Dielectric and Ultra-Fine Copper Conductor Imprinting Processes - Subproject II: Electrochemical Atomic Layer Deposition Dual Reinforcement of Porous Dielectric and Ultra-Fine Copper Conductor Engineering (MOST103-2221-E150-006)
9. **National Science Council**
   January 1, 2014 - December 31, 2014
   High-Efficiency GaN-based LED Manufacturing on Patterned Silicon Wafers (MOST103-2623-E150-002-ET)
10. **National Science Council**
    August 1, 2013 - August 31, 2014
    Preparation Study of Chromium and Chromium Aluminum Nitride/Nitride High-Temperature Solar Absorbers (NSC102-2221-E150-039)
11. **National Science Council**
    August 1, 2013 - July 31, 2014
    Development of Novel Self-Barrier Electrochemical Deposition Processes for Copper/Silver Alloy Interconnects (NSC100-2221-E150-033-MY3)
12. **National Science Council**
    August 1, 2012 - July 31, 2013
    Optical Properties and Thermal Stability of Transition Metal Nitride-Nitride High-Temperature Solar Absorbers Prepared by Reactive Magnetron Sputtering (NSC101-2221-E150-046)
13. **National Science Council**
    August 1, 2011 - July 31, 2013
    Development of Novel Self-Barrier Electrochemical Deposition Processes for Copper/Silver Alloy Interconnects (NSC100-2221-E150-033-MY3)
14. **National Science Council**
    August 1, 2008 - July 31, 2011
    Ultra-Thin TaSi2Cx Diffusion Barrier and Copper Metallization Process (NSC97-2221-E-150-001-MY3)
15. **National Science Council**
    August 1, 2007 - July 31, 2008
    Development of CIGS Thin-Film Photovoltaic Devices - Innovative CIGS Photovoltaic Back Electrode Development and Integration Characteristics (NSC96-2221-E-150-034)
16. **National Science Council**
    May 1, 2007 - April 30, 2008

Development of High-Transparency/High-Conductivity Transparent Conductive Oxide Thin Films (NSC96-2622-E-150-003-CC3)

17. **National Science Council**
    August 1, 2006 - July 31, 2007
    Ion Beam Deposition/Plasma Modified Photovoltaic Device Transparent Conductive Film Process Characteristics (Key Research Project) (NSC 95-2221-E-150-006)
18. **National Science Council**
    November 1, 2005 - October 31, 2006
    Ion Beam Sputtering Fabrication of Thin-Film Transistor Alloy Thin Film Gate, Source/Drain Process (NSC 94-2622-E-150-029-CC3)
19. **National Science Council**
    August 1, 2005 - July 31, 2006
    Ion Beam Sputtering/Dense Novel Tantalum-Based Amorphous Thin Film Diffusion Barrier Characteristics and Copper Process Integration (NSC 94-2216-E-150-004)
20. **National Science Council**
    November 1, 2004 - October 31, 2005
    Novel Low-Temperature Poly-Silicon Thin Film Transistor Fabrication for Flexible Display Technology (NSC93-2262-E-150-054-CC3)
21. **National Science Council**
    August 1, 2004 - July 31, 2005
    Preparation of High-Conductivity Amorphous Tantalum-Based Diffusion Barrier and Copper Metallization Process Integration (II) (NSC93-2215-E-150-004)
22. **National Science Council**
    August 1, 2003 - July 31, 2004
    Preparation of High-Conductivity Amorphous Tantalum-Based Diffusion Barrier and Copper Metallization Process Integration (I) (NSC92-2215-E-150-004)
23. **National Science Council**
    August 1, 2002 - July 31, 2003
    Electroless Plating Preparation of Submicron Self-Aligned Silicide and Copper Process Integration Research (NSC-91-2215-E-150-001)
24. **National Science Council**
    January 1, 2002 - July 31, 2002
    High-Temperature Sputtering In-Situ Deposition of Self-Aligned Silicide (CoSi2 and NiSi) and Copper Metallization Process Integration Research (NSC90-2215-E-150-001)

Journal Papers：

International Journals

1. **Jau-Shiung Fang**, Tzu-Ming Yang, Yen-Chang Pan, Guan-Yu Lai, Yi-Lung Cheng, and Giin-Shan Chen (2020, Dec). Chemical-Structure Evolution Model for the Self-Assembling of Amine-Terminated Monolayers on Nanoporous Carbon-Doped Organosilicate in Tightly Controlled Environments.*Langmuir*

2. G.S. Chen, W.L. Gao,**J.S. Fang**, Y.L. Cheng (2020, Nov). synergy of mercaptosilane monolayer embedding and extremely dilute cobalt alloy for metallization of copper without a conventional metallic barrier.*Materials Chemistry and Physics*

3. Giin-Shan Chen, Ren-Jie Taua,**Jau-Shiung Fang**, Yi-Lung Cheng, Yen-Chin Chen (2020, Oct). Mechanism of strengthening electroless plated copper films with extremely T dilute oxide dispersion alloying: The optimal MnO addition.*Appl. Surf. Sci.*, 527, 146818

4. Li-Chung Yang, Der-Ru Jung, Fang-Ru Po, Chia-His Hsu and **Jau-Shiung Fang**(2020, Oct). Tailoring Bandgap and Electrical Properties of Magnesium-Doped Aluminum Zinc Oxide Films Deposited by Reactive Sputtering Using Metallic Mg and Al–Zn Targets.*Coatings*

5. Cheng, Yi-Lung; Lin, Yu-Lu; Chen, Giin-Shan;**Fang, Jau-Shiung**(2020, Aug). Reliability Improvement for Stacked Dielectric with Low-k SiOCH Dielectric and SiCN Barrier by UV-Assisted Thermal Curing.*ECS Journal of Solid State Science and Technology*

6. Y.L. Cheng,**J.S. Fang**, G.S. Chen, C.Y. Lee (2020, May). Effect of Post-annealing on Reliability of Cu/Low-k Interconnects.*ECS J. Solid. State Sci. Techno*

7. Yi-Lung Cheng, Hong-Chang Huang, Chih-Yen Lee, Giin-Shan Chen,**Jau-Shiung Fang**(2020, Apr). Comparison of Cu and Co Integration with Porous Low-k SiOCH Dielectrics. *Thin Solid Films*, 704, 138010

8. **Jau-Shiung Fang**, Yu-Fei Sie, Yi-Lung Cheng and Giin-Shan Chen (2020, Feb). A New Alternative Electrochemical Process for a Pre-Deposited UPD-Mn Mediated the Growth of Cu(Mn) Film by Controlling the Time during the Cu-SLRR.*Coatings*, 164

9. Yi-Lung Cheng, Chih-Yen Lee, Wei-Fan Peng, Giin-Shan Chen and **Jau-Shiung Fang**(2020, Feb). Electrical and Reliability Characteristics of Self-Forming Barrier for CuNd/SiOCH Films in Cu Interconnects.*coatings*, 10, 155

10. **Jau-Shiung Fang**, Kuang-Yu Yu, Sung-Te Chen, Yi-Lung Cheng, Yi-Sheng Wang and Giin-Shan Chen (2019, Dec). Reliability enhancement of copper/porous SiOCH metallization systems using nitrogen stuffing and bias-filter sputter deposited Mn2O3 barrier.*ECS J. Solid State Sci. & Technol.*, 8, N208-N213

11. Yi-Lung Cheng, Yu-Lu Lin, Chih-Yen Lee, Giin-Shan Chen,**Jau-Shiung Fang**(2019, Oct). Electrical Characteristics and Reliability of Nitrogen-Stuffed Porous Low-k SiOCH/ Mn2O3-xN/Cu Integration.*Molucules*, 24, 3882

12. Giin-Shan Chen, Ren-Jie Tau, Sung-Te Chen, Yen-Chin Chen, Yi-Lung Cheng,**Jau-Shiung Fang**(2019, Sep). Self-strengthening of electroless-plated copper via dual segregation of extremely dilute (0.1%) manganese oxide inclusions.*Materials Letter*, 257, 126711

13. Jai-Ling Wu,**Jau-Shiung Fang**(2019, May). Role of ethylenediamine additive in Cu growth on a Co/SiO2/Si substrate via electrochemical atomic layer deposition of Pb and its surface limited redox replacement.*Apply Surface Science*, 477, 280-284. MOST 104-2221-E-150-005-MY2

14. **J.S. Fang**, H.M. Wang, C.H. Hsu, Y.L. Cheng, G.S. Chen (2019, Apr). Growth of a Cu(Co) film by underpotential deposition of Co and controlling the time of the surface-limited redox replacement of Cu.*Int. J. Electrochem. Sci.*, 14, 5143-5153

15. Y.L. Chang, Chih-Yen Lee; Wei-Jie Hung; Giin-Shan Chen;**Jan-Shiung Fang**(2019, Apr). Barrier-Free Process for Fluorinated Silicon Glass Film in Cu Interconnects.*Thin Solid Films*, 678, 1-7

16. Yi-Lung Cheng , Chiao-Wei Haung, Chih-Yen Lee, Giin-Shan Chen,**Jau-Shiung Fang**(2019, Apr). Self-Assembled Monolayers on Highly Porous Low-k Dielectrics by 3-Aminopropyltrimethoxysilane Treatment. *Coatings*, 9, 246

17. **J.S. Fang**, K.Y. Yu, Y. S. Wang, G.S. Chen, Y.L. Chenu (2018, Nov). A 2-nm-thick Mn Oxide on a Nitrogen-Stuffed Porous Carbon-Doped Organosilica as a Barrier of Cu Films.*ECS J. Solid State Science and Technology*, 7, N137-N142

18. **J.S. Fang**, M.Y. Hsu, Y.L. Cheng, G.S. Chen (2018, Oct). Electrochemical Growth of Cu(Ru) films via underpotential deposition of Pb, surface-limited

redox replacement of Cu, and underpotential deposition of Ru.*J. Electro. Mater.*, 47, 5973-5980

19. Y.L. Cheng,Chih-Yen Lee, Wei-Jie Hung, Giin-Shan Chen,**Jau-Shiung Fang**(2018, Sep). Electrical and Reliability Characteristics of Dielectric Stack with Low Dielectric Constant SiCOH and Capping SiCNH Films.*Surface Coatings and Technology*, 350, 57-63

20. Y.L. Cheng, B.H. Lin, C.Y. Lee, G.S. Chen,**J.S. Fang**(2018, Aug). Comparison of O2 plasma treatment on porous low dielectric constant material at sidewall and bottom of trench structure.*Thin Solid Films*, 660, 808-813

21. Y.L. Cheng; Chih-Yen Lee; Wei-Jie Hung; Giin-Shan Chen;**Jan-Shiung Fang**(2018, Aug). Comparison of Various Low Dielectric Constant Materials.*Thin Solid Films*, 660, 871-878

22. **J.S. Fang**, J.L. Wu, S.M. Wang, C.H. Hsu, Y.L. Cheng, G.S. Chen (2018, Jun). Influence of trisodium citrate on the Cu electrodeposition by sequential underpotential deposition of Pb and surface-limited redox replacement of Cu.*Int. J. Electrochem. Sci.*, 13, 7466-7477

23. Giin-Shan Chena, Tzu-Ming Yang, Sung-Te Chen, Yi-Lung Cheng,**Jau-Shiung Fang**(2018, Feb). A new alternative self-assembled-monolayer activation process for electroless deposition of copper interconnects without a conventional barrier.*Electrochemistry Communications*, 87, 9-12

24. **J.S. FANG**, L.Y. LIN, C.L. WU, Y.L. CHENG, and G.S. CHEN (2017, Aug). Effects of Additives on Electrochemical Growth of Cu Film on Co/SiO2/Si Substrate by Alternating Underpotential Deposition of Pb and Surface-Limited Redox Replacement by Cu.*Journal of Electronic Materials*, 46 (11) 6677-6684. MOST 104-2221-E-150-005-MY2

25. Sung-Te Chena, Yu-Cheng Chungb,**Jau-Shiung Fang**c, Yi-Lung Chengd, Giin-Shan Chen (2017, Feb). Enhancement of seeding for electroless Cu plating of metallic barrier layers by using alkyl self-assembled monolayers.*Applied Surface Science*, 405, 350-358

26. Y. L. Cheng, C. Y. Lee; Y. L. Huang, C. R. Sun, W. H. Lee, G. S. Chen;**J. S. Fang**, and B. T. Phan (2016, Dec). Cu-induced Dielectric Breakdown of Porous Low Dielectric Constant Film.*Journal of Electronic Materials*

27. Giin-Shan Chen, Ding-Ye Wu, Sung-Te Chen, Yi-Lung Cheng,**Jau-Shiung Fang**, and Tzu-Ming Yang (2016, Sep). Enhancement of Seeding and Electroless Cu Plating on TaN Barrier Layers: The Role of Plasma

Functionalized Self-Assembled Monolayers.*Journal of The Electrochemical Society*, 163, D463-D468

28. Y.J. Cheng, G.S. Chen,**J.S. Fang**(2016, Aug). Effect of Annealing Temperature on Electrical and Reliability Characteristics of HfO2/Porous Low-k Dielectric Stacks.*Microelectronic Engineering*, 34-39

29. Y. L. Cheng, Y. L. Huang, C. R. Sun, W. H. Lee, G. S. Chen, and **J. S. Fang**(2016, Jul). Effect of Cu Drift on Dielectric Breakdown for Porous Low Dielectric Constant Film under Static and Dynamic Stress.*Electrochemical Society Transactions*, 72(2), 241-252 (2016)

30. **J.S. Fang**, J.H. Chen, G.S. Chen, Y.L. Cheng, T.S. Chin (2016, Apr). Direct, sequential growth of copper film on TaN/Ta barrier substrates by alternation of Pb-UPD and Cu-SLRR.*Electrochimica Acta*, 206 (2016) 45–51. MOST 104-2221-E-150-005-MY2

31. Quang-Phu Tran; Tsung-Shune Chin;**Jau-Shiung Fang**; An-Ya Lo (2016, Mar). P-type highly conductive and transparent NdF3-doped tin oxide films prepared by dip coating.*Thin solid Films*, 618 (1) 159-164

32. **J.S. Fang**, S.L. Sun, Y.L. Cheng, G.S. Chen, T.S. Chin (2016, Feb). Cu and Cu(Mn) films deposited layer-by-layer via surface limited redox replacement and underpotential deposition.*Applied Surface Science*, 364, 258-364. MOST 104-2221-E-150-005-MY2

33. Yi-Lung Cheng Kai-Chieh. Kao Chi-Jia Huang Giin-Shan Chen **Jau-Shiung Fang** (2015, Nov). Atomic Layer Deposition HfO2 Capping Layer Effect on Porous Low Dielectric Constant Materials.*Applied Surface Sciences*, 354, 115-119

34. **J.S. Fang**, C.S. Lin, Y.Y. Huang, T.S. Chin (2015, Aug). Surface morphologies induced hydrophobicity of fluorocarbon films grown by a simultaneous etching and deposition process.*Journal of Electronic Materials*, 44, 2908-2914 (2015)

35. **J.S. Fang**, C.J. Cai, J.H. Lee, T.S. Chin (2015, May). Phase formation and stability of Cu-Ge films with low electrical resistivity.*Thin Solid Films*, 584, 228-231. MOST 100-2215-E-150-033-MY3

36. Q.P. Tran,**J.S. Fang**, T.S. Chin (2015, Apr). Properties of fluorine-doped SnO thin films by a green sol-gel method.*Materials Science in Semiconductor Processing*, 40, 664-669

37. **J.S. Fang**, Y.S. Liu, T.S. Chin (2015, Mar). Atomic layer deposition of copper and copper silver films using an electrochemical process.*Thin Solid Films*, 580, 1-5. MOST 100-2221-E-150-033-MY3

38. **Jau-Shiung Fang**, Li-Chung Yang, Yi-Chun Lee (2014, Feb). Low resistivity Fe–Co–B–Ti–Nb amorphous thin film as a copper barrier.*Journal of Alloys and Compounds,* 586, S348-S352. (SCI)

39. **J.S. Fang**, W.J. Su, M.S. Huang, C.F. Chiu, T.S. Chin (2014, Jan). Characteristics of plasma-treated amorphous Ta-Si-C film as a diffusion barrier for copper metallization.*J. Mater. Electron.,* 212-218. (SCI)

40. T. K. Tsai, S. J. Hsueh,**J. S. Fang**(2014, Jan). Optical Properties of AlxOy/Ni/AlxOy Multilayered Absorber Coatings Prepared by Reactive DC Magnetron Sputteri.*J. Electro. Mater.*, 43, 229-235

41. **J.S. Fang** and Y.T. Chen (2013, Sep). Passivation of copper-hafnium thin films using self-forming hafnium oxide.*Surf. Coating & Technol.,* 231, 166-170 (2013). (SCI)

42. T.K. Tsai, S.J. Hsueh, J.H. Lee and **J.S. Fang**(2012, Nov). Optical Properties and Durability of Al2O3-NiP/Al Solar Absorbers Prepared by Electroless Nickel Composite Plating.*J. Electro. Mater.*, 41, 53-59

43. T.K. Tsai, S.J. Hsueh, J.H. Lee and **J.S. Fang**(2011, Apr). Optical Properties and Durability of Al2O3-NiP/Al Solar Absorbers Prepared by Electroless Nickel Composite Plating.*J. Electro. Mater.*, Vol. 41 No. 1 53-59. (SCI)

44. 3.**J. S. Fang**, J. H. Lin, B. Y. Chen and T. S. Chin (2011, Feb). Ultrathin Ru-Ta-
C Barriers for Cu Metallization. J. Electrochem. Soc. , 158, H97-H102. (SCI)

45. **J.S. Fang**, W.H. Luo, C.H. Hsu, J.C. Yang, and T.K. Tsai, (2011) "The Transparent Conductive Properties of Manganese-doped Zinc Oxide Films Deposited by Chemical Bath Deposition", J. Electro. Mater. J. Electro. Mater Vol 41, No 1,122-129,(SCI)

46. **J.S. Fang**, J.H. Lin, B.Y. Chen G.S. Chen and T.S. Chin, (2011)"Low-Resistivity Ru-Ta-C Barriers for Cu Interconnects", J. Electro. Mater. Vol.41, No.1, 138-141 (SCI)

47. T.K. Tsai, S.J. Hsueh, J.H. Lee and **J.S. Fang**(2011), "Optical Properties and Durability of Al2O3-NiP/Al Solar Absorbers Prepared by Electroless Nickel Composite Plating", Vol. 41 No. 1 53-59 (SCI)

48. T.K. Tsai, S.S. Wu, C.S. Hsu, **J.S. Fang**, (2011) "Effect of Phosphorous on the Copper Diffusion Barrier Properties of Electroless CoWP Films", Thin Solid Films 519 (2011) 4958–4962

49. **J. S. Fang**,J. H. Lin, B. Y. Chen and T. S. Chin, (2011) "Ultrathin Ru-Ta-C Barriers for Cu Metallization" J. Electrochem. Soc.158 **,**H97-H102 (SCI)

50. **J. S. Fang**,J. H. Lin, B. Y. Chen and T. S. Chin, (2010) "Ultrathin Ru-Ta-C Barriers for Cu Metallization" J. Electrochem. Soc. (Accepted)

51. T.K. Tsai, H.C. Chen, J.H. Lee, Y.Y. Huang,**J.S. Fang** (2010) "Highly conductive Indium Zinc Oxide Prepared by Reactive Magnetron Co-sputtering Technique using Indium and Zinc Metallic Targets", J. Vac. Sci. Technol. A 28, 425-430 (SCI)

52. T.H. Lin, J.H. Lee, C.S. Hsu, and **J.S. Fang**(2009)," Fifteen-Nanometer Ru Diffusion Barrier on NiSi/Si for a sub-45 nm Cu Contact Plug", J. Electro. Mater., 38 (11) 2251-2256. (SCI)

53. W.H. Luo, T.K. Tsai, J.C.Yang, W.M. Hsieh, C.H. Hsu, and **J.S. Fang**(2009)," Enhancement in Conductivity and Transmittance of Zinc Oxide Prepared by Chemical Bath Deposition", J. Electro. Mater., 38 (11) 2264-2269. (SCI)

54. **Jau-Shiung Fang**, Chin-Fu Chiu, Jia-Huei Lin, Ting-Yi Lin, and Tsung-Shune Chin (2009) "Failure Mechanism of 5 nm Thick Ta-Si-C Barrier Layers Against Cu Penetration at 750-800°C" J. Electrochem. Soc. 156 (2) H147-H152. (SCI)

55. L.C. Yang, C.Y. Cheng, and **J.S. Fang**(2008),"Characterization of polycrystalline CuInSe2 thin films deposited by sputtering and evaporation as a function of composition", J. Phys. Chem. Solids 69, 435-440 (SCI)

56. C.S. Hsu, H.Y. Hsieh, and **J.S. Fang**(2008) "Enhancement of Oxidation Resistance and Electrical Properties of Indium-Doped Copper Thin Films" J. Electro. Mater. 37 (6) 852-859. (SCI)

57. Ting-Yi Lin, Huai-Yu Cheng, Tsung-Shune Chin, Chin-Fu Chiu and **Jau-Shiung Fang**(2008) "Highly Thermal-Stable Amorphous $TaSi_2C_x$Films as Diffusion Barrier" J. Electrochem. Soc. 155 (2) G29-G32. (SCI)

58. **J.S. Fang**, T.P. Hsu, M.L. Ker, H.C. Chen, J.H. Lee, C.S. Hsu, and L.C. Yang, (2008) "Evaluation of properties of Ta-Ni amorphous thin film for copper metallization in integrated circuits" J. Phys. Chem. Solids, 69, 430 – 434. (SCI)

59. T.Y. Lin, H.Y. Cheng, T.S. Chin, C.F. Chiu, and **J.S. Fang**(2007) "5-nm-thick TaSiC amorphous films stable up to 750^{o}C as a diffusion-barrier for copper metallization" Appl. Phys. Lett. 91, 152908. (SCI)

60. **J.S. Fang**, M.L. Ker and H.C. Chen, (2007) "Evaluation of dc-sputtered Glassy Ta-Co-N Thin Film for Copper Metallization" J. Electro. Mater.,36 (11) 1462-1468. (SCI)

61. **J.S. Fang**, T.P. Hsu, and H.C. Chen, (2007)" Barrier Properties of Amorphous Binary Ta-Ni Thin Films for Cu Interconnection" J. Electro. Mater. 36 (5) 614-622(SCI).

62. **J.S. Fang** and H.Y. Hsieh, (2007)" Structural and passivative behaviors of Cu(In) thin film" J. Electro. Mater. 36 (2) 129-135 (SCI).

63. J.K. Hsiao, M.F. Tai, Y.C. Lee, C.Y. Yang, H.Y. Wang, H.M. Liu,**J.S. Fang**, and S.T. Chen, (2006) "Labelling of cultured macrophages with novel magnetic nanoparticles" J. Magn. Magn. Mater., 304, c4-c6.(SCI)

64. **J.S. Fang**, T.P. Hsu, and G.S. Chen, (2006) "Crystallization and failure behavior of Ta-TM (TM = Fe, Co) nanostructured/amorphous diffusion barriers for copper metallization" J. Electro. Mater., 35 (1) 15-21.(SCI)

65. W.K. Wang, D.S. Wuu, W.C. Shih,**J.S. Fang**, C.E. Lee, W.Y. Lin, P. Han, R.H. Horng, T.C. Hsu, T.C. Huo, M.J. Jou, A. Lin and Y.H. Yu (2005) "Near-Ultraviolet InGaN/GaN Light-Emitting Diodes Growm on Patterned Sapphire Substrates" J. J. Appl. Phys., 44(4) 2512-2515.(SCI)

66. D.S. Wuu, W.K. Wang, W.C. Shih, R.H. Horng, C.E. Lee, W.Y. Lin, and **J.S. Fang**(2005)"Enhanced output power of near-ultraviolet InGaN-GaN LEDs frown on patterned sapphire substrates", IEEE Photon. Technol. Lett., 17(2) 288-290.(SCI)

67. **J.S. FANG,**T.P. HSU and G.S. CHEN (2004), "Crystallization and failure behaviors of Ta-Ni nanostructured/amorphous diffusion barriers for copper metallization" J. Electro. Mater., 33(10) 1176-1181.(SCI)

68. **J.S. Fang**, G.S. Chen and Y.W. Lin (2004), "Phase transition behavior of reactive sputtering deposited Co-N thin films using transmission electron microscopy" J. Vac. Sci. Tech. A, 22(3) 698-704(SCI)

69. H.L.Chang,**J.S. Fang** and C.T. Kuo(2003), "Structures and properties of the crystalline Si-C-N using additional Si-source and Co-catalyst" Review on Advanced Materials Science vol 5, 432-439(SCI)

70. H.L.Chang,**<u>J.S. Fang</u>** and C.T. Kuo (2003), “Growth model of carbon nanotubes assisted with Co-based catalyst” Review on Advanced Materials Science, vol 5, 425-431(SCIE)

71. **<u>J.S Fang</u>,**H.L. Chang, G.S. Chen, and P.Y. Lee (2003), “Crystallization and failure behaviors of Ta-Co nanostructured/amorphous diffusion barriers for copper metallization” Review on Advanced Materials Science, vol 5, 510-513.(SCIE)

72. **<u>J. S. Fang</u>**, F.W. Tsai, and T.S. Chin, (2003), “Enhancement of [00*l*] Texture and Magnetoresistance of Sputtered La-Ca-Mn-O Thin Films on Silicon by Inserting Buffer Layers” Jpn. J. Appl. Phys., 42 1237-1241 (SCI)

73. G.S. Chen, J.J. Gua, C.K. Lin, C.S. Hsu, L.C. Yang, and **<u>J.S. Fang</u>**, (2002), “Evaluation of radio-frequency sputter-deposited textured TiN thin films as diffusion barriers between copper and silicon” J.Vac. Surf. Tech., A 20(2) 479-485 (SCI)

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3. **J.S. Fang**(2018)\"Strengthening of porous low-k dielectric by nitrogen stuffing treatment and capping an ultrathin Mn barrier\",ANM 2018(PRT)

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1. **Fang, Jau-Shiung**; Hsieh, Yu-Fei; Wang, Hsuan-Min. Method for Preparing Alloy Thin Films by Controlling the Surface-Limited Redox Reaction Time. Republic of China Patent
2. **Fang, Jau-Shiung**; Liu, Lu-Ming. Self-Aligned Metal Silicide Process for Integrated Circuits. Republic of China Patent No. 126310. Patent Period: January 21, 2001, to January 25, 2019
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Participation in International Academic Conferences

1. 2009, Thermec, Berlin, Germany
2. 2009, TMS in San Francisco, U.S.A.
3. 2008, EUROMAT in Nuremberg, Germany.
4. 2008, Cross-Strait Conference on Particles, Shanghai, China
5. 2007, ANSTO in Sidney, Australlia.
6. 2007, TMS in Orlendo, U.S.A.
7. 2006, Cross-Strait Conference on Particles, Beijing, China
8. 2005, EUROMAT in Pargue, C.Z.
9. 2005, TMS in San Francisco, U.S.A.
10. 2004, Cross-Strait Conference on Particles, Yantai, China
11. 2003, Nano in Crete, Greece.
12. 2002, Intermag in Amsterdam, The Neatherland.

13. 2000, IITC in San Francisco, U.S.A.

Academic Honors

1. Annual Meeting of TACT (2007) - Excellent Paper Award: "Characteristics of Ultra-Thin Tantalum Silicide Copper Process Barrier Layers."
2. Annual Meeting of TACT (2008) - Excellent Paper Award: "Development of Transparent Conductive ZnO Thin Films Prepared by Chemical Bath Deposition."
3. Journal of Taiwan Society for Metal Heat Treatment (2008) - Second Place Paper Award: "Thermal Stability of Ultra-Thin Ta-Si-C Amorphous Thin Films."
4. Journal of Taiwan Society for Metal Heat Treatment (2009) - Excellent Paper Award: "Study on Integration Characteristics of Ultra-Thin (Ru-Ta)Si-C Amorphous Diffusion Barrier Layers with Copper Processes."