Dr. Chen, Zhong (陈忠)

Associate Professor
School of Materials Science and Engineering
Nanyang Technological University,
50 Nanyang Avenue, Singapore 639798
Phone: +65 67904256; Fax: +65 67909081

ResearcherID: A-2244-2011
E-mail: aszchen@ntu.edu.sg
Web: http://www.ntu.edu.sg/home/aszchen/

ACADEMIC QUALIFICATIONS

- Ph.D. (Mech. Mater.), University of Reading, The United Kingdom, 1997
- M.Eng. (Mater. Sci. & Eng.), Hefei University of Technology, China, 1987
- B.Eng. (Metall. & Mater. Sci.), China University of Mining and Technology, China, 1984

PROFESSIONAL EXPERIENCE

- January 2003 – present: Associate Professor, School of Materials Science & Engineering, Nanyang Technological University, Singapore
- March 2000 – December 2002: Assistant Professor, School of Applied Science / School of Materials Engineering, Nanyang Technological University, Singapore
- January 1999 – March 2000: Research Fellow, Institute of Materials Research and Engineering, Singapore
- April 1997 – December 1998: Postdoctoral Research Associate, Institute of Materials Research and Engineering, Singapore
- October 1993 – September 1996: Research Student Assistant, Department of Engineering, University of Reading, U.K.
- May 1992 – September 1993: Visiting Researcher, Department of Engineering, University of Reading, U.K.
- July 1991 – May 1992: Lecturer, Department of Materials Science and Engineering, Hefei University of Technology, China
- June 1987 – June 1991: Assistant Lecturer, Department of Materials Science and Engineering, Hefei University of Technology, China

RESEARCH INTERESTS

- Thin Films & Low-dimensional Materials: Thin films & nano-materials for environmental and clean energy applications; Electronic thin films; Protective and functional surface coatings.
- Mechanical Behavior of Materials: Fracture, fatigue, and creep of bulk monolithic & composite materials, thin films and multi-layers; Experimental and computational mechanics.

SCHOLASTIC AWARDS AND HONOURS

- January 2007 – January 2010: Adjunct Professor, Shanghai University, Shanghai, China
- July 2006 – June 2007: Adjunct Scientist, Institute of Materials Research and Engineering, Singapore

- Research Outstanding and Award Recognition from Nanyang Technological University 2005, 2006
- UK-Singapore Partners in Science Collaboration Awards from the British High Commission in Singapore in 2005
- Overseas Research Scholarship (ORS) Award from the Committee of Vice Chancellors and Principals (CVCP) for three years (1993-1996) in the United Kingdom

INTERNATIONAL CONFERENCE ORGANIZATION

- Co-chair of Symposium L: Modelling of Materials, 1st International Conference on Materials for Advanced Technologies (ICMAT 2001), 1-6 July 2001, Singapore
- International Scientific Committee Member, 5th International Conference on Electronic Materials and Packaging (EMAP 2003), 17-20 November 2003 Singapore
- Organizing Committee Member of Symposium K: Theory, Modelling and Simulation, 2nd International Conference on Materials for Advanced Technologies (ICMAT 2003), 7-12 December 2003, Singapore
- Organizing & Technical Committee Member, 2nd International Conference on Technological Advances of Thin Films & Surface Coatings (Thin Films 2004), 13-17 July 2004, Singapore
- Co-chair of Symposium E: Mechanical Behavior of Micro- and Nanoscale Systems & Scientific Committee Member of Symposium H: Silicon Microelectronics: Processing to Packaging, 3rd International Conference on Materials for Advanced Technologies (ICMAT 2005) 3-8 July 2005, Singapore
- Technical Committee Member on Materials & Processes, 7th Electronic Packaging Technology Conference (EPTC 2005), 7-9 December 2005, Singapore
- Co-chair of Technical Committee on Materials & Processes, 8th Electronic Packaging Technology Conference (EPTC 2006), 6-8 December 2006, Singapore
- Symposium Chair of Mechanical Properties of Thin Films, and Organizing cum Technical Committee Member of the 3rd International Conference on Technological Advances of Thin Films & Surface Coatings (Thin Films 2006), 11-15 December 2006, Singapore
- Organizing Committee Member, 2nd MIDAS - Materials In Devices And Systems Symposium in the 5th International Conference on Materials Processing for Properties and Performance (MP^3), 11-15 December 2006, Singapore
- Chair of Technical Committee on Packaging Materials & Processes, and Academic Committee Member of the 8th International Conference on Electronics Packaging Technology (ICEPT 2007), 14-17 August 2007, Shanghai, China
- Organizing Committee Member, Symposium on Toughening and Toughness Measurement of Ceramic Thin Films and Coatings in the 6th International Conference on Materials Processing for Properties and Performance (MP^3), 14-16 September 2007, Beijing China
- Organizing Committee Member, 3rd MIDAS - Materials In Devices And Systems Symposium in the 6th International Conference on Materials Processing for Properties and Performance (MP^3), 14-16 September 2007, Beijing China
- Chair of Technical Committee on Materials & Processes, and Organizing Committee Member of the 9th Electronic Packaging Technology Conference (EPTC 2007), 10-12 December 2007, Singapore
- Chair of Technical Committee on Nanomaterials and Nanostructures, 2nd IEEE International Nanoelectronics Conference (INEC 2008), 24 - 27 March 2008, Shanghai, China

- Symposium Chair of Mechanical Properties of Thin Films, and Organizing cum Technical Committee Member of the 4th International Conference on Technological Advances of Thin Films & Surface Coatings (Thin Films 2008), 13-16 July 2008, Singapore
- Organizing Committee Member, 4th MIDAS - Materials In Devices And Systems Symposium in the 7th International Conference on Materials Processing for Properties and Performance (MP^3), 5-7 November 2008, Singapore
- Chair of Technical Committee on Materials & Processes, and Finance Chair of the 10th Electronic Packaging Technology Conference (EPTC 2008), 09-12 December 2008, Singapore
- Co-chair of Symposium U: Mechanical Behavior of Micro- and Nano-scale Systems, 5th International Conference on Materials for Advanced Technologies (ICMAT 2009), 28 June-3 July 2009, Singapore
- Technical Committee Member for Packaging Materials & Processes, The 10th International Conference on Electronic Packaging Technology & High Density Packaging (ICEPT-HDP 2009), 10-13 August 2009, Beijing
- Chair of Technical Committee on Materials & Processes of the 11th Electronic Packaging Technology Conference (EPTC 2009), 9-11 December 2009, Singapore
- Symposium Chair of Mechanical Properties of Thin Films, and International Committee Member of the 5th International Conference on Technological Advances of Thin Films & Surface Coatings (Thin Films 2010), 11-14 July 2010, Harbin China
- Technical Committee Member for Packaging Materials & Processes, The 11th International Conference on Electronic Packaging Technology & High Density Packaging (ICEPT-HDP 2010), 16-19 August 2010, Xi'an China
- International Organising Committee Member of The 15th International Conference on TiO_2 Photocatalysis: Fundamentals and Applications (TiO_2-15), 15-18 November 2010, San Diego, California USA
- Technical Committee Member for Packaging Materials & Processes, The 12th International Conference on Electronic Packaging Technology & High Density Packaging (ICEPT-HDP 2011), 8-11 August 2011, Shanghai China
- International Organising Committee Member of The 16th International Conference on TiO_2 Photocatalysis: Fundamentals and Applications (TiO_2-16), 7-10 November 2011, San Diego, California USA
- International Advisory Board of the International Workshop on Diffusion, Stress, Segregation + Reactions, 1-7 June 2011, Cherkasy, Ukraine
- Symposium Chair of Mechanical Properties of Thin Films, and Organizing cum Technical Committee Member of the 6th International Conference on Technological Advances of Thin Films & Surface Coatings (Thin Films 2012), 14-17 July 2012, Singapore
- Technical Committee Member for Packaging Materials & Processes, The 13th International Conference on Electronic Packaging Technology & High Density Packaging (ICEPT-HDP 2012), 13-16 August 2012, Guilin China
- International Organising Committee Member of the 17th International Conference on Semiconductor Photocatalysis and Solar Energy Conversion (SPASEC-17), 12-15 November 2012, Jacksonville, Florida USA
- Technical Committee Member of the Sustainable Future Energy 2012 conference and the 10th Sustainable Energy and Environment (SEE) Forum: Innovations for Sustainable and Secure Energy, 21-23 November 2012, Brunei Darussalam
- Organising Committee Member of The 11th Asia-Pacific Conference on Engineering Plasticity and Its Applications, 5-7 December 2012, Singapore

REVIEW FOR INTERNATIONAL JOURNALS

ACS Applied Materials & Interfaces; Acta Materialia; Applied Catalysis A: General; Applied Catalysis B: Environmental; Applied Physics Letters; Applied Surface Science; Chemical Engineering Journal; Composites Science and Technology; Engineering Fracture Mechanics; IEEE Transactions on Advanced Packaging; IEEE Transactions on Components and Packaging Technologies; IEEE Transactions on Device and Materials Reliability; IEEE Transactions on Electronics Packaging Manufacturing; International Journal of Computational Methods; International Journal of Fracture; International Journal of Modern Physics B; International Journal of Physical Sciences; Korea Journal of Chemical Engineering; Journal of Alloys and Compounds; Journal of Applied Physics; Journal of Colloid and Interface Science; Journal of Electronic Materials; Journal of Electronic Packaging; Journal of Hazardous Materials; Journal of Materials Research; Journal of Mechanical Engineering Science; Journal of Molecular Catalysis A: Chemical; Journal of Nanoscience and Nanotechnology; Journal of Solid State Chemistry; Key Engineering Materials; Materials Chemistry and Physics; Materials Science and Engineering A; Materials Science and Engineering B; Metallurgical and Materials Transactions A; Microelectronic Engineering; Microelectronics Reliability; Microsystem Technologies; Nanoscale; Nanoscience and Nanotechnology Letters; Polymers for Advanced Technologies; Semiconductor Science and Technology; Scripta Materialia; Simulation Modelling Practice and Theory; Soldering & Surface Mount Technology; Solid State Phenomena; Surface & Coatings Technology; Surface and Interface Analysis; The Journal of Physical Chemistry; The Open Ceramic Science Journal; The Open Surface Science Journal; Thin Solid Films; Tribology International

EDITORSHIP

- Area Editor, Simulation Modelling Practice and Theory, Elsevier (ISSN: 1569-190X)
- Editorial Board, International Journal of the Physical Sciences, Academic Journals (ISSN: 1992-1950)
- Editorial Advisory Board, Circuit World, Emerald (ISSN: 0305-6120)
- Editorial Board, Advanced Materials Letters, VBRI Press (ISSN: 0976-3961)
- Guest Editor, Key Engineering Materials, Vol. 227: "Modeling of Materials", Trans Tech Publications 2002 (ISSN: 1013-9826)
- Guest Editor, Materials Science and Engineering A, Vol. 423 (Nos. 1-2): "Mechanical Behaviour of Micro- and Nano-scale Systems", Elsevier 2006 (ISSN: 0921-5093)
- Guest Editor, Thin Solid Films, Vol. 517 (No. 17), Elsevier 2009 (ISSN: 0040-6090)
- Guest Editor, Journal of Nanoscience and Nanotechnology, Vol. 10 (No. 7), American Scientific Publishers 2010 (ISSN: 1533-4880)
- Guest Editor, International Journal of Modern Physics B, Vol. 24 (Nos. 1-2), World Scientific 2010 (ISSN: 0217-9792)
- Guest Editor, Thin Solid Films, Vol. 519 (No. 15), Elsevier 2011 (ISSN: 0040-6090)

SELECTED RESEARCH PROJECTS

- "Study of process responses, intermetallics and reliability of palladium-copper wire bonding", Industry funded, Jan 2012-Jan 2016, Principal Investigator
- "Multi-functional sol-gel coatings for wind-turbine blade protection", Industry funded, Sep 2011-Sep 2014, Principal Investigator
- "Efficient wafering and texturing of single and multi-crystalline silicon for solar cells", Clean Energy Research Programme (CERP) grant NRF2010EWI-CERP001-008, Aug 2011-Jul 2014, Co-Principal Investigator

- "Modelling of Braided Textile Composites", funded by Defence Science and Technology Agency (DSTA) TL/POD0814080/01, Jun 2009-Sep 2012, Principal Investigator
- "Towards advanced light-weight materials: reinforcing thermoplastics with polyhedral oligomeric silsesquioxane (POSS)-modified nanoclay", A*Star SERC Grant 0921370014, Jun 2009-May 2012, Co-Principal Investigator
- "Low-temperature Solution-processed Protonated Titanium Oxides for Photocatalytic Applications", National Research Foundation (NRF) / Environment and Water Industry Development Council (EWI) grant MEWR 651/06/160, Jan 2009-Dec 2011, Principal Investigator
- "Formulation and Processing of Polymeric Nanocomposites", Borealis AG Austria, Nov 2008-Oct 2010, Co-Principal Investigator
- "Advanced Metal Bonding through Self Assembled Monolayers", A*Star SERC grant 0821010020, Aug 2008-Jul 2011, Co-Principal Investigator
- "Ultra-fine Pitch Copper Interconnections for Future Generation Miniaturised Devices", The British Council PMI2 Strategic Alliances and Partnerships project (Research Co-operation strand) RC 41, Apr 2008-Dec 2010, Lead Researcher
- "Development of Damage- and Failure-Resistant Nanostructured and Interfacial Materials", University Research Committee RG 31/06, Oct 2006-Oct 2008, Principal Investigator
- "Design and Construction of A Photocatalytic Reactor for Hydrogen Generation", Office of Research, Nanyang Technological University RG 112/05, Feb 2006-Feb 2007, Principal Investigator
- "Design and Development of Active Photocatalysts for the Production of Hydrogen and Oxygen by Splitting Water Using Solar Energy", A*Star SERC PSF Grant 0521010016, Sep 2005-Aug 2008, Co-Principal Investigator
- "Nanostructured Materials, Systems and Devices", University Research Council RG 14/03, Apr 2004-Apr 2007, Principal Investigator
- "Intrinsic Stress in Electroless Nickel Plating and Its Effect on Reliability", NTU AcRF grant RG 19/00, Dec 2000-Nov 2003, Principal Investigator

SERVICES HIGHLIGHT (NTU)

- Director, Advanced Materials Research Centre (AMRC) (Apr 2011 – Mar 2013)
- Assistant Chair (Undergraduates), School of Materials Science and Engineering (Jul 2009 – Jul 2012)
- Chairman, Nanyang Research Program Committee, Nanyang Technological University for two years (2007 & 2008)
- Member, Singapore Science and Engineering Fair Working Committee (appointed by Ministry of Education, Singapore) for two years (2007 & 2008)
- Member, Aerospace Engineering Task Force & Curriculum Committee, Nanyang Technological University (2004-06)
- Member, School Advisory Committee (2003-05, appointed by President of NTU)
- Member, BEng Curriculum Committee, School of Materials Science and Engineering
- Member, Sports Advisory Council of Nanyang Technological University (2002-06)
- Final Year Project Coordinator, School of Materials Engineering (2002-04; 2005-06)
- Lab Director, Surface Engineering Lab, School of Materials Engineering (2002-04)
- Member, Career Guidance and JC/School Relation, School of Materials Engineering (2000-04)
- Leader of Fracture Mechanics Group, School of Materials Engineering (2000-02)

PUBLICATIONS

Patents

1. US Patent 6,797,211 (filed: 13 Jun 2001; granted: 28 Sep 2004) / Taiwan Patent 529182 (filed: 07 Jul 2000; granted 21 Apr 2003) / European Patent 1133789 (file: 09 Jul 1999; granted 05 Nov 2008), "Mechanical Patterning of A Device Layer", E. Guenther, Z. Chen, B. Cotterell
2. US Patent 6,776,050 (filed: 28 Sep 2001; granted: 17 Aug 2004), "Support for Bending Test of Flexible Substrates", M. Auch, E. Guenther, S. J. Chua, Z. Chen
3. US Patent Application number 11/937,210 (filed: 08 Nov 2007), "Method of Forming an Interconnect on a Semiconductor Substrate", J. J. Zhou, Z. Chen
4. PCT Application No. PCT/SG2008/000448 (international filing on 27 Nov 2008), "Room Temperature Direct Metal-metal Bonding", J. Wei, X. F. Ang, C. C. Wong, Z. Chen
5. US Patent application filed in August 2010, "One-step low-temperature synthesis of protonated titanate/ titania composite nanoparticle photocatalyst", Y. H. Cheng, Z. Chen
6. US Patent application filed in March 2011, "Method of High Throughput Production of Titanate Micro-Spherulite Particles with High Specific Surface Area by Electrochemical Spark Discharge Spallation of Titanium", Y. X. Tang, Z. L. Dong, Z. Chen

Book chapters

1. B. Cotterell, Z. Chen, A. G. Atkins "On the Extension of the J_R Concept to Significant Crack Growth", Invited contribution to *Multiscale Deformation and Fracture in Materials and Structures*, Solid Mechanics and Its Applications series - Volume 84 (The James R. Rice 60th Anniversary Volume) (edited by T.-J. Chuang and J. W. Rudnicki), Springer, 2002, pp. 223-236 (ISBN: 9781402003813)
2. Z. Chen, L. Y. L. Wu "Scratch Resistance of Protective Sol-Gel Coatings on Polymeric Substrates", Invited contribution of Chapter 14 in: *Tribology of Polymeric Nanocomposites: Friction and Wear of Bulk Materials and Coatings* (Book Editors: K. Friedrich and A. K. Schlarb; Tribology and Interface Engineering Series, No. 55, Series Editor: B. J. Briscoe), Elsevier, 2008, pp.325-353 (ISBN: 9780444531551)
3. Y. K. Lai, C. J. Lin, Z. Chen "Extremely Wetting Pattern by Photocatalytic Lithography and Its Application", Invited book chapter in *Recent Advances in Nanofabrication Techniques and Applications* (Book Editor: B. Cui), InTech, 2011, pp. 591-614 (ISBN: 9789533076027)

Journal articles

Before 2000

1. Z. Y. Deng, Z. Chen, H. F. Ding, C. M. Wang, T. Xie "The Analysis of Fracture Toughness of Forged Microalloyed 35MnVN Steel", *Iron Steel Vanadium Titanium*, 1987, Vol. 8(2), pp. 22-27 (in Chinese)
2. Z. Chen, Z. Y. Deng "In-situ Study of Ductile Fracture Mechanisms in a Micro-alloyed Medium Carbon Steel", *Physical Testing and Chemical Analysis Part A: Physical Testing*, 1991, Vol. 27(5), pp. 8-11 (in Chinese)
3. Z. Chen, Z. S. Zhu, Z. Y. Deng, H. F. Ding, G. F. Yuan, S. Y. Xu "The Fracture Toughness and Fracture Mechanisms of Medium-carbon Micro-alloyed Steels", *Hot Working Technology*, 1991, No.4, pp. 10-15 (in Chinese)
4. T. Xie, Z. Chen "Effect of Normalizing Treatments of Forged Microalloyed Medium Carbon Steel 35MnVN on Its Strength and Toughness", *Hot Working Technology*, 1996, No.1, pp. 44-45 (in Chinese)
5. B. Cotterell, Z. Chen "The Blister Test – Transition from Plate to Membrane Behaviour for an Elastic Material", *International Journal of Fracture*, 1997, Vol. 86, pp. 191-198
6. A. G. Atkins, Z. Chen and B. Cotterell "The Essential Work of Fracture and J_R Curves for the Double Cantilever Beam Specimen: An Examination of Elastoplastic Crack Propagation", *Proceedings of The Royal Society of London*, 1998, Vol. A454, pp. 815-833
7. Z. Chen, B. Cotterell, W. T. Chen "Characterizing the Interfacial Fracture Toughness for Microelectronic Packaging", *Surface and Interface Analysis*, 1999, Vol. 28, pp. 146-149

2000 – 2003

8. B. Cotterell, Z. Chen "Buckling and Fracture of Thin Films under Compression", *Key Engineering Materials*, 2000, Vol. 183-1, pp. 187-192
9. B. Cotterell, Z. Chen "Buckling and Cracking of Thin Films on Compliant Substrate under Compression", *International Journal of Fracture*, 2000, Vol. 104, pp. 169-179
10. Z. Chen, B. Cotterell, W. Wang, E. Guenther, S. J. Chua "A Mechanical Assessment of Flexible Opto-electronic Devices", *Thin Solid Films*, 2001, Vol. 394, pp. 202-206
11. Z. Chen, B. Cotterell, W. Wang "The Fracture of Brittle Thin Films on Compliant Substrate in Flexible Displays", *Engineering Fracture Mechanics*, 2002, Vol. 69, pp. 597-603

12. Z. Chen "The Root Angle in Elastoplastic Peeling Tests", *Key Engineering Materials*, 2002, Vol. 227, pp. 41-48
13. A. G. Atkins, Z. Chen, B. Cotterell "Prediction of the Energy Dissipation Rate in Ductile Crack Propagation", *Fatigue & Fracture of Engineering Materials & Structures*, 2003, Vol. 26, pp. 67-77
14. B. Cotterell, Z. Chen, J. B. Han, N. X. Tan "The Strength of the Silicon Die in Flip Chip Assemblies", *Journal of Electronic Packaging*, 2003, Vol. 125, pp. 114-119
15. Z. Chen, X. Xu, C. C. Wong, S. Mhaisalkar "Effect of Plating Parameters on the Intrinsic Stress in Electroless Nickel Plating", *Surface & Coatings Technology*, 2003, Vol. 167, pp. 170-176
16. B. Balakrisnan, C. C. Chum, M. Li, Z. Chen, T. Cahyadi "Fracture toughness of Cu-Sn intermetallic thin films", *Journal of Electronic Materials*, 2003, Vol. 32, pp. 166-171

2004

17. M. He, Z. Chen, G. Qi "Solid state interfacial reaction of Sn-37Pb and Sn-3.5Ag solders with Ni-P under bump metallization", *Acta Materialia*, 2004, Vol. 52, pp. 2047-2056
18. Y. C. Ee, Z. Chen, S. Xu, L. Chan, K. H. See, S. B. Law "Electroless Copper Deposition as a Seed Layer on TiSiN Barrier", *Journal of Vacuum Science & Technology A*, 2004, Vol. 22, pp. 1852-1856
19. L. K. Teh, E. Anto, C. C. Wong, S. G. Mhaisalkar, E. H. Wong, P. S. Teo, Z. Chen "Development and Reliability of Non-Conductive Adhesive Flip-Chip Packages", *Thin Solid Films*, 2004, Vol. 462, pp. 446-453
20. Y. C. Ee, Z. Chen, L. Chan, Alex K. H. See, S. B. Law, K. C. Tee, K. Y. Zeng, L. Shen "Effect of Processing Parameters on Electroless Cu Seed Layer Properties", *Thin Solid Films*, 2004, Vol. 462, pp. 197-201
21. A. Kumar, M. He, Z. Chen, P. S. Teo "Effect of Electromigration on Interfacial Reactions between Electroless Ni-P and Sn3.5Ag Solder", *Thin Solid Films*, 2004, Vol. 462, pp. 413-418
22. M. He, A. Kumar, P. T. Yeo, G. J. Qi, Z. Chen "Interfacial Reaction between Sn-Rich Solders and Ni-Based Metallization", *Thin Solid Films*, 2004, Vol. 462, pp. 387-394
23. M. He, Z. Chen, G. J. Qi, C. C. Wong, S. Mhaisalkar "Effect of Post Reflow Cooling Rate on Intermetallic Compound Formation between Sn-3.5Ag Solder and Ni-P Under Bump Metallization", *Thin Solid Films*, 2004, Vol. 462, pp. 363-369
24. M. He, W. H. Lau, G. J. Qi, Z. Chen "Intermetallic Compound Formation between Sn-3.5Ag Solder and Ni-Based Metallization during Liquid State Reaction", *Thin Solid Films*, 2004, Vol. 462, pp. 376-383
25. Z. Chen, M. He, G. Qi "Morphology and Kinetic Study of Interfacial Reaction between SnAg3.5 Solder and Electroless Ni-P Metallization", *Journal of Electronic Materials*, 2004, Vol. 33, pp. 1465-1472

2005

26. M. He, Z. Chen, G. J. Qi "Mechanical Strength of Thermal Aged Sn-3.5Ag/Ni-P Solder Joints", *Metallurgical and Materials Transactions*, 2005, Vol. 36A, pp. 65-75
27. A. Kumar, M. He, Z. Chen "Barrier Properties of Thin Au/Ni-P Under Bump Metallization for Sn-3.5Ag solder", *Surface & Coatings Technology*, 2005, Vol. 198. pp. 283-286
28. Z. H. Gan, S. Mhaisalkar, Zhong Chen, S. Zhang, Zhe Chen, K. Prasad "Study of Interfacial Adhesion Energy of Multi-layered ULSI Thin Film Structures Using Four-point Bending Test", *Surface & Coatings Technology*, 2005, Vol. 198. pp. 85-89
29. S. P. Chong, Y. C. Ee, Z. Chen, S. B. Law "Electroless Copper Seed Layer Deposition on Tantalum Nitride Barrier Film", *Surface & Coatings Technology*, 2005, Vol. 198. pp. 287-290
30. Y. C. Ee, Z. Chen, D. Z. Chi, W. D. Wang, S. Xu, S. B. Law "Barrier Property of TiSiN Films Formed by Low Frequency High Density Inductively Coupled Plasma Process", *Surface & Coatings Technology*, 2005, Vol. 198, pp. 291-295
31. Y. C. Ee, Z. Chen, L. Chan, K. H. See, S. B. Law, S. Xu, Z. L. Tsakadze, P.P. Rutkevych, K. Y. Zeng, L. Shen "Formation of Ti-Si-N film using low frequency, high density inductively coupled plasma process", *Journal of Vacuum Science & Technology B*, 2005, Vol. 23, pp. 2444-2448

2006

32. Z. H. Gan, S. G. Mhaisalkar, Zhong Chen, Zhe Chen, K. Prasad, S. Zhang, M. Damayanti, N. Jiang "Modification of Ta/Polymeric Low-k Interface by Electron Beam Treatment", *Journal of The Electrochemical Society*, 2006, Vol. 153 (1), pp. G30-G34
33. Y. C. Ee, Z. Chen, T.-M. Lu, Z. L. Dong, S. B. Law "Low temperature physical-chemical vapor deposition of Ti-Si-N-O barrier films", *Electrochemical and Solid State Letters*, 2006, Vol. 9 (3), pp. G100-G103
34. A. Kumar, Z. Chen, S. Mhaisalkar, C. C. Wong, P. S. Teo, V. Kripesh "Effect of Ni-P Thickness on Solid-State Interfacial Reactions between Sn-3.5Ag Solder and Electroless Ni-P Metallization on Cu Substrate", *Thin Solid Films*, 2006, Vol. 504 (1-2), pp. 410-415

35. Y. C. Ee, Z. Chen, S. B. Law, S. Xu "Formation and characterization of Ti-Si-N-O barrier films", *Thin Solid Films*, 2006, Vol. 504 (1-2), pp. 218-222
36. W. Shao, Z. H. Gan, S. G. Mhaisalkar, Z. Chen, H. Y. Li "The effect of line width on stress-induced voiding in Cu dual damascene interconnects", *Thin Solid Films*, 2006, Vol. 504 (1-2), pp. 298-301
37. L. C. Chin, X. F. Ang, J. Wei, Z. Chen, C. C. Wong "Enhancing direct metal bonding with self-assembled monolayers", *Thin Solid Films*, 2006, Vol. 504 (1-2), pp. 367-370
38. X. F. Ang, G. G. Zhang, J. Wei, Z. Chen, C. C. Wong "Temperature and pressure dependence in thermocompression gold stud bonding", *Thin Solid Films*, 2006, Vol. 504 (1-2), pp. 379-383
39. Z. H. Gan, W. Shao, S. G. Mhaisalkar, Z. Chen, H. Y. Li "The influence of temperature and dielectric materials on stress induced voiding in Cu dual damascene interconnects", *Thin Solid Films*, 2006, Vol. 504 (1-2), pp. 161-165
40. E. Chwa, L. Wu, Z. Chen "Factors towards Pencil Scratch Resistance of Protective Sol-Gel Coatings on Polycarbonate Substrate", *Key Engineering Materials*, 2006, Vol. 312, pp. 339-344
41. Z. Chen, A. Ng, J. Yi, X. Chen "Multi-layered Electroless Ni-P Coatings on Powder-Sintered Nd-Fe-B Permanent Magnet", *Journal of Magnetism and Magnetic Materials*, 2006, Vol. 302 (1), pp. 216-222
42. Z. Chen, M. He, B. Balakrisnan, C. C. Chum "Elasticity modulus, hardness and fracture toughness of Ni_3Sn_4 intermetallic thin films", *Materials Science and Engineering A*, 2006, Vol. 423 (1-2), pp. 107-110
43. A. Kumar, Z. Chen "Influence of Solid-State Interfacial Reactions on the Tensile Strength of Cu/Electroless Ni-P/Sn-3.5Ag Solder Joint", *Materials Science and Engineering A*, 2006, Vol. 423 (1-2), pp. 175-179
44. Y. C. Ee, J. S. Juneja, P.-I. Wang, T.-M. Lu, H. Bakhru, L. Chan, S. B. Law, C. Yong, Z. Chen, S. Xu "Bias-temperature Stability of Ti-Si-N-O films", *Journal of The Electrochemical Society*, 2006, Vol. 153 (5), pp. G470-G474
45. L. Y. L. Wu, G. H. Tan, X. T. Zeng, T. H. Li, Z. Chen "Synthesis and Characterization of Transparent Hydrophobic Sol-Gel Hard Coatings", *Journal of Sol-Gel Science and Technology*, 2006, Vol. 38 (1), pp. 85-89
46. Z. H. Gan, Zhong Chen, S. G. Mhaisalkar, Zhe Chen, K. Prasad, S. Zhang, N. Jiang "Effect of electron beam treatment on adhesion of Ta/polymeric low-k interface," *Applied Physics Letter*s, 2006, Vol. 88 (23), Art. No. 233510
47. A. V. Vairagar, Z. H. Gan, Wei Shao, S. G. Mhaisalkar, H. Y. Li, K. N. Tu, Z. Chen, E. Zschech, H. J. Engelmann, S. Zhang "Improvement of electromigration lifetime of submicrometer dual-damascene Cu interconnects through surface engineering", *Journal of The Electrochemical Society*, 2006, Vol. 153 (9), pp. G840-G845
48. Z. H. Gan , W. Shao, S. G. Mhaisalkar, Z. Chen, H. Y. Li, K. N. Tu, A. M. Gusak "Reservoir effect and the role of low current density regions on electromigration lifetimes in copper interconnects", *Journal of Materials Research*, 2006, Vol. 21 (9), pp. 2241-2245
49. Y. C. Ee, Z. Chen, S. B. Law, S. Xu, N. L. Yakovlev, D. Lai "Copper diffusion in Ti-Si-N layers formed by inductively coupled plasma implantation", *Applied Surface Science*, 2006, Vol. 253 (2), pp. 530-534
50. A. Kumar, Z. Chen "Effect of Ni-P Thickness on the Tensile Strength of Cu/Electroless Ni-P/Sn-3.5Ag Solder Joint", *IEEE Transactions on Components and Packaging Technologies*, 2006, Vol. 29 (4), pp. 886-892
51. Z. Chen, A. Kumar, Mona "Effect of Phosphorus Content on Cu/Ni-P/Sn-3.5Ag Solder Joint Strength after Multiple Reflow", *Journal of Electronic Materials*, 2006, Vol. 35 (12), pp. 2126-2134

2007

52. Z. H. Gan, A. M. Gusak, W. Shao, Z. Chen, S. G. Mhaisalkar, T. Zaporozhets, K. N. Tu "Analytical Modeling of Reservoir Effect on Electromigration of Cu Interconnects", *Journal of Materials Research*, 2007, Vol. 22 (1), pp. 152-156
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