**Curriculum Vitae**

***Seungbae Park, Ph.D.***

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1. **Personal Information**

Mechanical Engineering Department

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**Education**

Ph.D., Purdue University, West Lafayette, IN, USA, '94

M.S., Aerospace Eng., Seoul National University, Seoul, Korea, '90

B.S., Aerospace Eng., Seoul National University, Seoul, Korea, '88

**Professional Experience**

’15 to present Director, Integrated Electronics Engineering Center (IEEC), a New York State Center of Advanced Technology

’13 to present Professor, Mechanical Eng., SUNY Binghamton

’07 to ‘13 Associate Professor, Mechanical Eng., SUNY Binghamton

’08 to ’09 Technical Advisor (Resident), Samsung Electronics, Korea

’08 to ’09 Visiting Professor, Konkuk University, Seoul, Korea

’02 to ‘07 Assistant Professor, Mechanical Eng., SUNY Binghamton

’96 to ’02 Advisory Engineer, IBM Microelectronics, Endicott, East Fishkill, NY

’99 Lecturer, Dept. of Mechanical Eng, SUNY Binghamton

'95 Research Engineer, Mechanical & Aerospace Eng, UCLA, Los Angeles, CA

'94 to ’95 Post Doctoral Fellow, Purdue University, W. Lafayette, Indiana

1. **Research and Scholarly Activities**

**a. *Awards***

New York State Assembly Citation, Technology Innovation Leader of the Year Award, December 2015.

President’s Award for International Education of the Year, Binghamton University, 2015.

Best Paper Award, ASME/InterPACK 2013 Conference, San Francisco, CA, July 2013.

“An Experimental and Numerical Study of the Dynamic Fracture of Glass,” Liang Xue, Yuling Niu, Hohyung Lee, Da Yu, Satish Chaparala, and Seungbae Park, IPACK2013-73292, *InterPACK2013,* July 2013

Best Paper Award, ASME/ITHERM 2006 Conference, San Diego, CA, June 2006.

Best Paper Award, ASME/SPIE Adaptive Structures and Material Systems, San Diego, CA, March 1996.

Stock Option Award for Distinguished Performer, IBM Microelectronic, July 1999.

Invention Achievement Award: IBM Microelectronics Division, November 1998.

Selected as an Executive Resource: IBM Microelectronics Division, March 1998.

Recognition Award: 4MB SRAM Task Force, IBM Microelectronics Div., October 1998.

Merit Honor Scholarship: Korean Government Overseas Study, August 1991 to July 1994.

**b. *Book Chapters***

“Modeling, Simulation and Design Tools”, Sanjeev Sathe and S.B. Park, 2007 iNEMI Roadmap, International Electronics Manufacturing Initiative, Inc., Herndon, VA, 2007.

“Modeling, Simulation and Design Tools”, Sanjeev Sathe and S.B. Park, 2004 iNEMI Roadmap, International Electronics Manufacturing Initiative, Inc., Herndon, VA, 2004.

**c. *Articles in Refereed Journals***

[2015]

2015-1.“Investigation of Stress in MEMS Sensor Device due to Hygroscopic and Viscoelastic Behavior of Molding Compound,” Yeonsung Kim, Dapeng Liu, Hohyung Lee, Ruiyang Liu, Dipak Sengupta, and Seungbae Park, *IEEE Transactions on Components, Packaging and Manufacturing Technology*, Vol. 5, No. 7, pp. 945-954, 2015.

2015-2.“Dynamics Behavior of Flat Glass Panels under Impact Conditions: Experiments and Numerical Modeling,” Satish Chaparala, Da Yu, Liang Xue, and Seungbae Park, *Journal of the Soc. Of Info. Display*, 2015

2015-3.“Integrated hygro-swelling and thermo-mechanical behavior of mold compound for MEMS package during reflow after moisture preconditioning", J. Kwak and Seungbae Park, *Microelectronics International*, Vol. 32, pp.8 – 17, 2015

[2014]

2014-1. “Three-Dimensional and 2.5Dimensional Interconnection Technology: State of the Art,” Dapeng Liu and Seungbae Park, *J. of Electronic Packaging*, vol. 136, p. 014001, 2014.

2014-2.“A Note on the Normalized Approach to Simulating Moisture Diffusion in a Multimaterial System Under Transient Thermal Conditions Using ANSYS 14 and 14.5,” Dapeng Liu and Seungbae Park, *J. of Electronic Packaging*, vol. 134, 2014.

2014-3. “Optimal Material Property of Molding Compounds for MEMS Package,” Yeonsung Kim, Hohyung Lee, Xin Zhang, and Seungbae Park, *IEEE Transactions on Components, Packaging and Manufacturing Technology*, vol. 4, no. 10, 2014.

2014-4.“Development of Inclined Conductive Bump for Flip Chip Interconnection,” Ah-Young Park, Seungbae Park and Choong D. Yoo, *IEEE Trans. Of Comp., Packaging and Manufacturing Tech*., vol. 5, 2014.

2014-5.“Deflection study of protective tempered glass for display under ball drop impact,” Linag Xue, Da Yu, Hohyung Lee, Yuling Niu, Claire R Coble, Satish Chaparala, Seungbae Park, *Int. Journal of Impact Engineering*, 2014 (under review).

[2013]

2013-1.“Effects of Temperature on Mechanical Properties of SU-8 Photoresist Material,” Soonwan Chung and S.B. Park, *J. of Mechanical Science and Technology, vol.* 27, no. 9, pp. 2701-2707, 2013.

[2012]

2012-1. “Effect of Shield-Can on Dynamic Response of Board-Level Assembly," [D. Yu](http://www.springerlink.com/content/?Author=D.+Yu), J. Kwak, [S. B. Park](http://www.springerlink.com/content/?Author=S.+B.+Park), S. Chung, and J.Y. Yoon, **,** [*J. of Electronic Packaging,* vol. 134, no. 3,](http://www.springerlink.com/content/0361-5235/) 2012.

2012-2.“Reliability Assessment of Preloaded Solder Joint Under Thermal Cycling,” Da Yu, Hohyung Lee, and S.B. Park, [*J. of Electronic Packaging,* vol. 134, no. 4,](http://www.springerlink.com/content/0361-5235/) 2012.

2012-3. “Review of the F-16 Individual Aircraft Tracking Program,” Hongchul Lee, Hwanjeong Cho, and Seungbae Park, vol. 49, no. 5, *J. of Aircraft*, DOI: 10.2514/1.C031692, 2012.

2012-4. “Transport phenomena in proton exchange membrane fuel cells and over-potential distribution of membrane electrode assembly,” [Dong-Myung Suh](http://www.sciencedirect.com/science/article/pii/S1290072911002511) and [Seungbae Park](http://www.sciencedirect.com/science/article/pii/S1290072911002511), [*Int. J. Thermal Sciences*](http://www.sciencedirect.com/science/journal/12900729), [Volume 51](http://www.sciencedirect.com/science/journal/12900729/51/supp/C), pp 31-41, 2012.

[2011]

2011-1.“Characterizing the Material Properties of SAC105, SAC305, and SAC405 Solder Joints by Digital Image Correlation**,”** [T. T. Nguyen](http://www.springerlink.com/content/?Author=T.+T.+Nguyen), [D. Yu](http://www.springerlink.com/content/?Author=D.+Yu) and [S. B. Park](http://www.springerlink.com/content/?Author=S.+B.+Park)**,** [*J. of Electronic Materials*](http://www.springerlink.com/content/0361-5235/)*,* [Volume 40, Number 6](http://www.springerlink.com/content/0361-5235/40/6/), 1409-1415, DOI: 10.1007/s11664-011-1534-z , 2011.

2011-2.“Characterizing the Elasto-Plastic Behavior of Lead-free Solder Joints for Drop Test Modeling”, T.T. Nguyen, S.B. Park, *Microelectronics Reliability*, 51 (8), pp. 1385-1392 , 2011.

2011-3.“High-cycle fatigue life prediction for Pb-free BGA under random vibration loading,” D. Yu, A. Al-Yafawi, T.T. Nguyen, S.B. Park, and S.W. Chung, *Microelectronics Reliability* 51(3), pp. 649-656, 2011.

2011-4.“Transport phenomena in proton exchange membrane fuel cells and over-potential distribution of membrane electrode assembly,” D. Suh, S.B. Park, *Int. J. of Thermal Sciences*, on press, 2011.

[2010]

2010-1.“Effect of glue on reliability of flip chip BGA under thermal cycling”, T.T. Nguyen, D.G. Lee, J. B. Kwak, S. B. Park, *Microelectronics Reliability* , Vol. 50, pp. 1000-1006, 2010.

2010-2. “Estimation of Aircraft Structural Fatigue Life Using the Crack Severity Index Methodology,” Hongchul Lee, Seungbae Park, Hongon Kim, *J. of Aircraft*, Vol. 47, No. 5, pp 1672-, DOI: 10.2514/1.C000250, 2010.

2010-3.“High-cycle Fatigue Life Prediction for Pb-free BGA under Random Vibration Loading”, D. Yu, A. Al-Yafawi, T.T. Nguyen, S.B. Park, S.W. Chung, *Microelectronics Reliability,* Vol. 51, Issue 3, pp. 649-656, 2010.

2010-4.“Dynamic responses of PCB under product-level free drop impact,” Da Yu，Jae Kwak and S. B. Park *Microelectronics Reliability* Vol. 50, pp. 1028–1038, 2010.

[2009]

2009-1. “Three-Dimensional Shape Measurement with a Fast and Accurate Approach,” Z. Wang, H. Du, S. Park, and H. Xie, *Applied Optics*, vol. 48, No. 6, 1052-1061, 2009.

[2008]

2008-1. “Comparative Studies on Solder Joint Reliability of Plastic and Ceramic Ball Grid Array Packages of the Same Form Factor Under Power and Accelerated Thermal Cycling,” S.B. Park, Rahul Joshi, I. Ahmed, and S. Chung, *J. Electron. Packag*., vol. 130, Issue 4, DOI:10.1115/1.2993146 , 2008.

2008-2. “Failure analysis of contact probe pins for SnPb and Sn applications,” Changsoo Jang, Seungbae Park, Bill Infantolino, Lawrence Lehman, Ryan Morgan, and Dipak Sengupta, *Microelectronics* *Reliability,* vol. 48, pp 942-947, 2008.

2008-3. “Numerical Investigation of Underfill Failure due to Phase Change of Pb-free Flip Chip Solders during Board-Level Reflow,” *IEEE Trans. On Components and Packaging Technologies,* vol. 31, No. 3, pp661-669, DOI: 10.1109/TCAPT.2008.922010, 2008.

2008-4. “Comparison of Thermo-mechanical Behavior of Lead-Free Copper and Tin-Lead Column Grid Array Package,” S. B. Park and Rahul Joshi, *Microelectronics* *Reliability,* vol. 48/5, pp 763-772, 2008.

2008-5. “Measurement of Transient Dynamic Response of Circuit Boards of a Handheld Device during Drop using 3D Digital Image Correlation,” S.B. Park, Chirag Shah, Jae B. Kwak, Changsoo Jang, Soonwan Chung, and James M. Pitarresi, *J. Electron. Packag*., vol. 130,  Issue 4,  DOI:10.1115/1.3000097, 2008.

2008-6. “Design, fabrication, and experimental characterization of a flap valve IPMC micropump with a flexibly supported diaphragm,” T. Nguyen, N. Goo, V. Nguyen, Y. Yoo, and S. Park, *Sens. Actuators A: Physical,* vol. 141, pp. 640-648, 2008.

2008-7. “Advanced Thermal-Moisture Analogy Scheme for Anisothermal Moisture Diffusion Problem”, C. Jang, S. Park, B. Han, and S. Yoon, *J. of Electron. Packaging*, vol. 130, Issue 1, DOI:10.1115/1.2837521, 2008.

2008-8. “Effect of Oxidation in Indium Solderability”, S.B. Park, J. Kim, H. Schoeler, and J. Cho,  *J. of Electronic Materials*, vol. 37, no. 4, pp. 483-489, 2008.

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2007-1. “Assessment of Packaging Induced Stress on MEMS Devices Performance”, Sam Zhang, S.B. Park, and Michael Judy, *J. of MEMS,* vol. 16, No. 3, pp. 639-649, 2007.

2007-2. “Predictive Model for Optimized Design Parameters in Flip-Chip Packages”, S.B. Park, H.C. Lee, B. Sammakia, and K. Raghunathan, *IEEE Trans. On Components and Packaging Technologies,* vol. 30, No. 2, pp 1-8, 2007.

2007-3. “Effects of Phase Change of Pb-free Flip-Chip Solders during Board Level Interconnect Reflow Underfill Flows”, S. Chung, Z. Tang, and S.B. Park, *IEEE Trans. on Advanced Packaging,* vol. 30, No. 1, pp 38-43, 2007.

2007-4. “Measurement of Deformations in SnAgCu Solder Interconnects Under In-situ Thermal Loading”, S.B. Park, Ramji Dhakal, L. Lehman and E. Cotts, *Acta Materialia*, vol. 55, No. 9, pp. 3253-3260, 2007.

2007-5. “Grain Deformations and Strains in Board Level SnAgCu Solder Interconnects Under Deep Thermal Cycling”, S.B. Park, Ramji Dhakal, L. Lehman and E. Cotts, *IEEE Trans. on Components and Packaging Technology*, vol. 30, No. 1, pp 178-185, 2007.

2007-6. “Shorter Field Life in Power Cycling for Organic Packages”, S.B. Park and I. Ahmed, *J. of Electronic Packaging*, vol. 129, pp. 28-34, 2007.

[2006]

2006-1. “A Model of Shear Viscosity for Underfill Flows”, R. Yang, DC Sun, and S.B. Park, *J. of Electronic Packaging Materials*, vol. 35, No. 11, pp.2016-2025, 2006.

2006-2. “Effect of Settlement on Dense Slurry Flow in a Horizontal Channel”, R. Yang, DC Sun, and S.B. Park, *J. of Electronic Packaging Materials*, Vol. 35, No. 11, pp 2026-2034, 2006.

2006-3. “Material Characterization of Carbon-Nanotube-Reinforced Polymer Composite”, S. Chung, S. Makhar, H. Ackler, and S. Park, *Electronic Materials Letters*, Vol. 2, No. 3, pp 175-181, 2006.

[ - 2005]

1. "On the Design Parameters of Flip Chip PBGA Package Assembly for Optimum Solder Ball Reliability”, K. Verma, S.B. Park, B. Han, and W. Ackerman, *IEEE Trans. on Components and Packaging Technologies*, Vol. 24, No. 2, pp. 300-307, 2001.

2. "Measuring Fracture Toughness of Piezoceramics by Vickers Indentation Under the influence of Electric Fields”, C.T. Sun and S. B. Park, *Ferroelectrics,* Vol. 248(1-4), pp. 79-95, 2000.

3. "Measuring Strain Distribution During Mesoscopic Domain Reorientation in a Ferroelectric Material", S.B. Park, S.S. Park, G.P. Carman, and H.T. Hahn, *ASME J. of Materials and Technology,* Vol. 120, pp. 1-6, 1998.

4. "Minimizing Stress Levels in Piezoelectric Media Containing Elliptical Voids", S.B. Park and G.P. Carman, *J. of Applied Mechanics,* Vol. 64, No. 3, pp. 466-470, 1997.

5. "Tailoring the Properties of Piezoelectric Ceramics: Analytical", S.B. Park and G.P. Carman, *Int. J. Solids and Structures*, Vol. 34, No. 26, pp. 3385-3399, 1997.

6. "Effect of Substrate CTE on Solder Ball Reliability of Flip Chip PBGA Package Assembly", B. Han, M. Chopra, S. Park, L. Li, and K. Verma, *J. of Surface Mount Technology* , SMTA, Vol. 9, pp. 25-34, 1996.

7. "Fracture Criteria for Piezoelectric Ceramics-Reply", C.T. Sun and S. Park, *J. of American Ceramic Society*, Vol. 79, pp. 1136, 1996.

8. "Fracture Criteria for Piezoelectric Ceramics", S. Park and C.T. Sun, *J. of American Ceramic Society*, Vol. 78, pp. 1475-1480, 1995. **(Cited: 268)**

9. "Effect of Electric Field on Fracture of Piezoelectric Ceramics", S.B. Park and C.T. Sun, *Int. J. of Fracture*, Vol. 70, pp. 203-216, 1995. **(Cited: 191)**

10. "A study on the Identification of Damage Variables and Analysis of Process Under Cyclic Loadings: I. Theory and Experiment", S.B. Park and S.J. Kim, *J. of Korean Society for Aeronautical & Space Sciences*, Vol. 18, No.2, pp. 39-49, 1990.

11. "On the Identification of Damage Variables and Analysis of Process under Cyclic Loadings: II. Finite Element Analysis", S.J. Kim and S.B. Park, *J. of Korean Society for Aeronautical & Space Sciences*, Vol. 18, No.2, pp. 50-59, 1990.

12. "Development of Main/Post Processor for A/D Converter", S.B. Park, S.J. Shin, S.C. Beak, and S.J. Kim, *J. of Korean Society for Aeronautical & Space Sciences*, Vol. 17, No.1, 1989.

***d. Talks, Abstracts, and Other Professional Papers Presented***

**Articles**

1. “Critical Requirement for Next Generation Modeling”, Printed Circuit Design & Manufacture, <http://pcdandm.com/cms/cms/content/view/3571/95/> , June 2007.

**Refereed Conference Proceedings and Presentations**

[2015]

2015-1 “A New In-Situ Warpage Measurement of a Wafer with Speckle-Free Digital Image Correlation (DIC) Method,” Yuling Niu, Seungbae Park, and Hohyung Lee, *Proc. of 65th ECTC,* May 2015.

2015-2 “A Fracture Mechanics Based Parametric Study of the Cu-Cu Direct Thermo-Compression Bonded Interface Using 2D and 3D Finite Element Method,*”* Ah-Young Park, Seungbae Park, and Satish Chaparala, *Proc. of 65th ECTC,* May 2015.

[2014]

2014-1 “Comparative Study of Analytical Models to predict Warpage in Microelectronics Packages,” Charandeep Singh, Yeonsung Kim, and Seungbae Park,*Proc. of the IMECE 2014*,November 2014..

2014-2 “Validation of Material Constants for Low-Cycle Fatigue Modeling,” Quang Nguyen, Seungbae Park, and Tung Nguyen,*Proc. of the IMECE 2014*,November 2014.

2014-3 “Characterizations of creep behavior of actual lead free solder joint for modeling,” Hohyung Lee, Ruiyang Liu, Seungbae Park, and Jae Kwak, *Proc. of the IMECE 2014*,November 2014.

[2013]

2013-1 “TSV and Cu-Cu Direct Bond Wafer and Package-Level Reliability,” K. Hummler, B. Sapp, I. Ali, J.R. Lloyd, S. Kruger and S. Olson, S.B. Park, B. Murray, D. Jung, S. Cain, A. Park, and D. Ferrone, *Proc. of 63rd ECTC,* June 2013.

2013-2 “Methodology to Evaluate Pre-Applied Underfill Materials with Concurrent Flux Capability for Ultra-Fine Pitch Solder-Based Interconnects,” Sunoo Kim, Seth Kruger, Brian Sapp, and Sitaram Arkalgud, Ho Hyung Lee, and Seungbae Park, *Proc. of 63rd ECTC,* June 2013.

2013-3 “Mechanism of Low Temperature Copper-to-Copper Direct Bonding for 3D TSV Package Interconnection,” J. Cho, S. Yu, M.P.C. Roma, S. Maganty, S.B. Park, E. Bersch, C. Kim, and B. Sapp, *Proc. of 63rd ECTC,* June 2013.

2013-4 “Thermo-Mechanical Simulations of a Copper to Copper Direct Bonded 3D TSV Chip-Package Interaction Test Vehicle,” Ah-Young Park, Daniel Ferrone, Stephen Cain, Dae Young Jung, Bruce T. Murray, Seungbae Park, and Klaus Hummler, *Proc. of 63rd ECTC,* June 2013.

2013-5 “Optimization of Underfill Material for Better Reliability and Thermal Behavior of 3D Packages with TSVs,” Yeonsung Kim and S.B. Park, *Proc. of 63rd ECTC,* June 2013.

2013-6 “Characterization of Crack Growth Behavior of SAC405 Solder Joints under Drop Impact,” Quang Nguyen, Seungbae Park, and Tung Nguyen, IPACK2013-73110, *InterPACK2013,* July 2013.

2013-7 “Dynamic Analysis of Thin Glass under Ball drop Impact with new metrics,” Liang Xue, Claire R. Coble, Hohyung Lee, Da Yu, Satish Chaparala, and Seungbae Park, IPACK2013-73291, *InterPACK2013,* July 2013.

2013-8 “An Experimental and Numerical Study of the Dynamic Fracture of Glass,” Liang Xue, Yuling Niu, Hohyung Lee, Da Yu, Satish Chaparala, and Seungbae Park, IPACK2013-73292, *InterPACK2013,* July 2013.

2013-9 “An Experimental and Numerical Study of the Behavior of the Glass Edge under Ball Drop Impact,” Liang Xue, Dapeng Liu, Hohyung Lee, Da Yu, Satish Chaparala, and Seungbae Park, IPACK2013-73293, *InterPACK2013,* July 2013.

2013-10 “A Fracture Mechanics Based Parametric Study of the Copper-to-copper Direct Thermo-compression Bonded Interface using Finite Element Method,” Ah-Young Park, Seungbae Park, and Satish Chaparala, IPACK2013-73280, *InterPACK2013,* July 2013.

[2012]

2012-1 “Creep Strain Measurement of an Actual Leadfree Solder Interconnect Using Digital Image Correlation,” Hohyung Lee, Tung Nguyen, SB Park, *Proc. of the IMECE 2012*,November 2012.

2012-2 “Prediction of the Deformation During Assembly Process for Silicon Interposer with TSV,” Yeonsung Kim and SB Park,*Proc. of the IMECE 2012*,November 2012.

2012-3 “Stress Evolution in an Encapsulated MEMS Package due to Viscoelasticity of Packaging Materials”, Seungbae Park, Dapeng Liu, Yeonsung Kim, Hohyung Lee, and Sam Zhang, *Proc. of 62nd ECTC,* June 2012.

2012-4 “Stress relaxation test of mold compound for MEMS Packaging”, Yeonsung Kim and SB Park, *Proc. of ITHERM* *2012,* June 2012.

[2011]

2011-1 “Characterization of mechanical properties of actual SAC solder joints,” T.T. Nguyen, S.B. Park, *Proc. of 61st ECTC*, June 2011.

2011-2 “Optimal Underfill with a Consideration of Chip-Package-Interaction (CPI)”, J.B. Kwak, D. Yu, T.T. Nguyen, S.B. Park, *InterPACK2011,* July 2011.

2011-3 “Effect of compressive loading on the interconnect reliability under thermal cycling”, D. Yu, T.T. Nguyen, H.H. Lee, S.B. Park, *InterPACK2011,* July 2011.

[2010]

2010-1 “Finite Element Based Fatigue Life Prediction for Electronic Components under Random Vibration Loading”, Da Yu, Abdullah Al-Yafawi, Seungbae Park, Soonwan Chung, ECTC 2010.

2010-2 “Hygroscopic Swelling Behavior of Molding Compound at High Temperature,” Haojun Zhang, SB Park, *Proc. of ITHERM* *2010,* June 2010.

2010-3 “Modeling of Transport phenomena in Polymer Electrolyte Fuel Cells,” Dongmyung Suh, SB Park, *Proc. of ITHERM* *2010,* June 2010.

2010-4 “A methodology for thermo-mechanical characterization of high powered electronic packages,” Tung Nguyen, SB Park, *Proc. of ITHERM* *2010,*  June 2010.

2010-5 “Random Vibration Test for Electronic Assemblies Fatigue Life Estimation,” Abdullah Al-Yafawi, Seungbae Park; J. Pitarresi, Namseo Goo, *Proc. of ITHERM* *2010,*  June 2010.

2010-6 “Effect of Shield-Can for Dynamic Response of Board Level Assembly and the Reliability of Solder Joints under Drop/Shock Impact,” Jae Kwak, Da Yu, SB Park, *Proc. of ITHERM* *2010,*  June 2010.

2010-7 “A methodology for thermal-mechanical characterization of electronic packages”, S.B. Park, T.T. Nguyen, N.S. Goo, *IMECE 2010,* November 2010.

2010-8 “[Prediction of damage and fatigue life of high-temperature flip chip assembly interconnections at operations](http://mail.elsevier-alerts.com/go.asp?/bESJ001/mYFK6E7F/qIGK6E7F/uN46U7/xTCVFE7F/cutf%2D8),” Z. Zhang, S.B. Park, K. Darbha, and R.N. Master, *ECTC* 2010.

[2009]

2009-1 “Effect of Shield–Can Design on Dynamic Responses of PCB Under Board Level Drop Impact,” Da Yu and SB Park, *Proc. of the IMECE 2009*,IMECE2009, November 2009*.*

2009-2 “Deformation and Strain Measurement of Flip-chip Solder Bump under in-situ Thermal Loading,” Jae Kwak and S.B. Park, *Proc. of the IMECE 2009*,IMECE2009, November 2009*.*

2009-3 “Temperature Dependency of Coefficient of Hygroscopic Swelling of Molding Compound,” Seungbae Park, Haojun Zhang,Xin Zhang, Siu Lung Ng, and Ho Chong Lee,*Proc. of 59th ECTC*, June 2009.

2009-4 “Effect of Damping and Air Cushion on Dynamic Responses of PCB under Product Level Free Drop Impact,” Seungbae Park, Da Yu, Abdullah Al-Yafawi, Jae Kwak, John Lee,*Proc. of 59th ECTC*, June 2009.

2009-5 “Experimental and Numerical Verification of Water Ingress into a Void of Plastic Packages by Quick Diffusion,” Haojun Zhang, and SB Park,*Proc. of 59th ECTC*, June 2009.

[2008]

* 1. “Influence of Fastening Methods on the Dynamic Response of PCB’s Under Free Drop”, Seungbae Park, Abdullah Al-Yafawi, Da Yu, Jae B. Kwak, John Lee and Nam Seo Goo, *Proc. of ITHERM* *2008*, June 2008.
  2. “Three-Dimensional, Real-Time, and High-Accuracy Inline Monitoring System for Roll to Roll Manufacturing”, Z. Yang, H. Du, and S.B. Park, *Proc. of 7th* Flexible Electronics & Displays Conference and Exhibition, January 2008.

[2007]

* 1. “Effect of Boundary Conditions on the Dynamic Response Characterization Of Board-Level Drop Test,” Seungbae Park, C. Shah, and J. Kwak, *Electronic Packaging Technology Conf. 2007*, pp. 374-379, December 2007.

2007-2 “Investigation of Hygroscopic Swelling of Polymers in Freezing Temperature”, S.B. Park and H. Zhang, *Proc. of the IMECE 2007*,IMECE2007-43890, November 2007*.*

2007-3 “Experimental Verification of Water Ingress in a Void by Quick Diffusion at High Reflow Temperature”, S.B. Park, H. Zhang and C. Jang, *Proc. of the IMECE 2007*,IMECE2007-42079, November 2007*.*

2007-4 “Effect of Board-Level Reflow on Adhesion Between Lead-Free Solder and Underfill in Flip-Chip BGA Packages”, Z. Tang, S.B. Park, S.W. Chung, and HC Lee, *Proc. of the IMECE 2007*,IMECE2007-43159, November 2007*.*

2007-5 “Advanced Thermal-Moisture Analogy Scheme for Anisothermal Moisture Diffusion Problem,” C. Jang, B. Han, S.B. Park, and S. Yoon, *Proc. of the InterPACK 07,* July 2007.

2007-6 **“Durability Assessment of Contact Probe Pins for SnPb and Sn Applications,”** C. Jang, S.B. Park, B. Infantolino, L. Lehman, R. Morgan, and D. Sengupta, *Proc. of the InterPACK 07,* July 2007.

2007-7 “The 3d Deformation Measurement of MEMS Packages by Digital Image Correlation,” S.B. Park, J. Kwak, and S. Chung, *Proc. of the InterPACK 07,* July 2007.

2007-8  **“Full-field and transient dynamic analysis of drop impact for a thin-board of handheld devices – validation of simulation”,** S. B. Park, C. Shah, J. Kwak, and J. Pitarresi,*Proc. of 57th ECTC*, June 2007.

2007-9 **“Temperature Effect of Interfacial Fracture Toughness on Underfill for Pb-free Flip Chip Packages”,** S. B. Park, Soonwan Chung, and Zhenming Tang,*Proc. of 57th ECTC*, June 2007.

[2006]

2006-1 “Viscoelastic Material Properties of SU-08 and Carbon Nanotube Reinforced SU-08”, S.W. Chung, S. Mahkar, H. Ackler, and S.B. Park, *Proc. of the IMECE 2006*,November 2006*.*

2006-2 “Numerical Assessment on Ingress and Outgress of Moisture at a Micro Void in Plastic Encapsulated Packages”, C. Jang, B. Han and S.B. Park, *Proc. of the IMECE 2006*, November 2006.

2006-3 “Wrinkling of Thin Membrane under Thermal Loading”, J. Gao, J. Pitarresi and S.B. Park, *Proc. of the IMECE 2006*, November 2006.

2006-4 “Solderability of Indium with Various Oxide Thickness”, J. Kim, H. Schaller, J. Cho, and S.B. Park, *Proceedings of the IMECE 2006*, November 2006.

2006-5 “Assessment of Accurate Packaging Induced Stress for MEMS Devices”, Sam Zhang, S.B. Park, Michael Judy, and Ramon, *Proc. of ITHERM* *2006*, June 2006.

2006-6 “Experimental Evidence of Underfill Voiding and Delamination during Board Level Assembly of Pb-free Solders”, S. B. Park, S.W. Chung and Z. Tang, *Int. Sym. on Adv. Packaging Materials*, March 2006.

[2005]

2005-1 “Structural Reliability of SU-8 Material for MEMS Application”, S.B. Park, Soonwan Chung, Harold Ackler, Sandeep Mahkar, and Pinyen Lin, *Proc. of the IMECE 2005*, November 2005.

2005-2 “A Model of Shear Viscosity for Underflows”, D.C. Sun, Rong Yang, and S.B. Park, *Proc. of the IMECE 2005*, November 2005.

2005-3 “Effect of Settlement on Dense Slurry Flow in a Horizontal Channel”, D.C. Sun, Rong Yang, and S.B. Park, *Proc. of the IMECE 2005*, November 2005.

2005-4 “Grain Formation and Intergrain Stresses in a Sn3.8Ag0.7Cu Solder Ball”, S.B. Park, R. Dhakal, L. Lehman, and E. Cotts, *Proc. of the InterPACK 05,* July 2005.

2005-5  **“Investigation of Phase Change of Flip Chip Solders during the Second level Interconnect Reflow”,** S. B. Park, Soonwan Chung, and Zhenming Tang,*Proc. of 55th ECTC*, pp. 894-900, June 2005.

2005-6 “Thermomechanical Behavior of Organic and Ceramic Flip Chip Ball Grid Array Packages under Power Cycling”, S. B. Park, Rahul Joshi, and Bahgat Sammakia, *Proc. of Semi-Therm Conference,* pp. 214-222, March 2005.

[2004]

2004-1 “The Role of Intermetallics in Electromigration in Solder Bumps for Lead Free Solder Structure and Its Solder-Pad Combination*”*, S.B. Park and G. Iyer, *Proc. of the IMECE 2004*, November 2004.

2004-2 “Reliability of Pb-Free Copper Columns in Comparison with Tin-Lead Solder Column Interconnects”, S.B. Park, R. Joshi and L. Goldman, *Proc. of 54th ECTC*, pp. 82-89, 2004.

2004-3 “Predictive Model for Optimized Design Parameters in Flip-Chip Packages”, S.B. Park, K, Raghunathan and B. Sammakia, *Proc. of ITHERM 2004*, pp. 458-464, 2004.

2004-4 “An Accurate Assessment of Interconnect Fatigue Life through Power Cycling*”*, I. Ahmed and S.B. Park, *Proc. of ITHERM 2004*, pp. 397-404, 2004.

[ ~ 2003]

1. “Mechanical Design Parameters for Enhanced Solder Ball Reliability of Flip-Chip PBGA Package Assembly”, K. Verma, S.B. Park, and B. Han, *Proc. of the InterPACK ‘01*, July 2001.

2. "On the Design Parameters of Flip-chip PBGA Package Assembly for Optimum Solder Ball Reliability”, B Han, S.B. Park, K. Verma, W. Ackerman, *32nd Int. Symp. On Microelectronics*, Chicago, IL, October 1999.

3. "Moiré Interferometer Applied to a Piezoceramic Containing a Simulated Voids", S.S. Park, G.P. Carman, and S.B. Park, *Proc. of SPIE, Smart Structures and Materials*, Vol. 3040, pp. 120-128, 1997.

4. "Polarization Switching for Ferroelectric Materials", S.B. Park, S.S. Park, G.P. Carman, and H.T. Hahn, *ASME International Mechanical Engineering Congress and Exposition, ASME AD,* Vol. 52, pp. 603-612, 1996.

5. "Linear and Nonlinear Behavior of Piezoelectric Ceramics", S.B. Park, S.S. Park, and G.P. Carman, *Proc. of SPIE, Smart Structures and Materials*, Vol. 2715, 366-375, 1996.

6."Minimize Stress Concentration Near Defects", S.B. Park, Y. Fotinich, and G.P. Carman, *The Sixth International Conference of Adaptive Structures*, Key West, FL., Nov. 1995.

7. "Determination of Fracture Toughness for Piezoelectric Ceramics under the Influence of Electric Field Using Vickers Indentation", S. Park and C.T. Sun, *Proc. of SPIE, Smart Structures and Materials*, Vol. 2441, pp. 213-222, 1995

8. "Crack Extension in Piezoelectric Materials", S. Park and C.T. Sun, *Proc. of SPIE, Smart Structures and Materials*, Vol. 2189, pp. 357-368, 1994

9. “Material Characterization and Finite Element Analysis by the Theory of Continuum Mechanics” S.J. Kim, S.B. Park and W.D. Kim, *Proc. of Japan Society of Aeronautics and Space Science, 28th Aircraft Symp.*, Japan, 1990.

**Unrefereed Conference Proceedings**

1. “3D Packaging Challenges,” SB Park, UKC 2013, Meadowland, NJ, Aug.7-10, 2013

1. “Experimental Assessment of the Boundary Conditions for JEDEC Drop Test”, S. B. Park, Chirag Shah, Changsoo Jang, Soonwan Chung and James Pitarresi, *Proc. of Society of Experimental Mechanics,* June 2007.

2. “Whole Field Analysis of Polymer Film”, S. B. Park, Aaron Reichman, Jae Kwak, Soonwan Chung and Steve Cho, *Proc. of Society of Experimental Mechanics,* June 2007.

3. “Role of Thermomechanical Anisotropy in the Failure Mechanism of Lead-Free SnAgCu Ball Grid Array Joints” S.B. Park, Ramji Dhakal, L. Lehman, and E. Cotts, accepted for *Material Science and Technology 2006 Conf.,* October 2006 ***(Invited)***

4. “Strain Distribution on Grains of SnAgCu Solder Interconnects” S.B. Park, Ramji Dhakal, L. Lehman, and E. Cotts, *Material Science and Technology 2006 Conf.,* October 2006.

5. “Mobile Phone Drop Testing Using High Speed Imaging Correlation”, S. B. Park, Jae Kwak, Chirag Shah, and Tim Schmidt, *Proc. of Society of Experimental Mechanics,* June 2006.

6. “Grain Formation and Strain Distribution on Pb-Free SAC Ball Grid Array”, S. B. Park, and Ramji Dhakal, *Proc. of Society of Experimental Mechanics,* June 2006.

7. “Comparison of Full Field Optical Measurement Techniques: Moiré Interferometry and Digital Image Correlation for BGA Interconnects”, S. B. Park, Ramji Dhakal, and Rahul V Joshi, *Proc. of Society of Experimental Mechanics,* June 2005.

8. “Impact of Power Cycling in Plastic and Ceramic Ball Grid Array Packages”, R. Dahkal, I. Ahmed, and S. B. Park,*Society of Experimental Mechanics*, June 2004.

9. “Characterization of Warpage of Flip Chip Plastic Ball Grid Array Package and Its Effect on Solder Joint Reliability”, *Proc. of the 1999 IMAPS Conference*, October 1999.

10. "Characterization of Warpage of Flip-chip PBGA Package and its Effect on Solder Joint Reliability”, S.B. Park, B Han, K. Verma, *Proceedings of SPIE*, Vol. 3906, pp. 253-258, 1999.

11. “Predictive Modeling for Yield", S.B. Park, *IBM Academy of Technology in Yield Learning Conference*, May 1999. ***(Invited)***

12."On the Design Parameters for Optimum Solder Joint Reliability of Flip Chip Package Assemblies Subjected to Power Cycling Condition", P. Bharathan, K. Verma, B. Han, and S. Park, *SEM Spring Conference and Exhibit*, June 1998.

13. “On the Design Parameters for Optimum Solder Joint Reliability of Wire-Bond and Flip-Chip Plastic Ball Grid Package Assemblies”, *Proc. of the SEM Spring Conference on Experimental Mechanics*, June 1997.

14. “Effect of Underfill Encapsulation on the Solder Joint Reliability of Plastic Ball Grid Array Packages“, K. Verma, B. Han, M. Prakash, S. Park, and D. Caletka, *IEEE Components, Packaging, and Manufacturing Tech. Soc., Ball Grid Array/Flip Chip Workshop*, Binghamton, NY, October 1996.

15. "Effect of Substrate CTE on Solder Ball Reliability of Flip Chip PBGA Package Assembly", B. Han, M. Chopra, S. Park, L. Li, and K. Verma, *Surface Mount International Conference*, San Jose, CA, September 1996.

**Invited Talks, etc.**

1. “Warpage as an indicator of Reliability”, Key Note Speech, North Atlantic Test Workshop 2015.
2. “Challenges of Packaging When We Move from Ceramic to Organic,” Invited talk, IMAPS Regional Meeting, IBM T.J. Watson Research Center, Yorktown Heights, NY, October 26, 2006.
3. “Grain Formation and Failure of Pb-Free Solders under Thermal Cycling“, Invited talk, International Electronics Packaging Symposium, GE Global Research, Niskayuna, NY, October 23-24, 2006.
4. “Reliability of Pb-Free Solder Interconnects” Invited Seminar Series, Intel, Phoenix, AZ, July 10, 2006.
5. “3D Digital Image Correlation for the Investigation of SAC Solder Grain Stresses“, Invited Seminar, StatsChipPAC, Korea, April 19, 2005.
6. “Reliability Assessment of MEMS and MOEMS Package”, invited seminar, Analog Device, Cambridge, MA, May 25, 2004.
7. “Shadow Moire vs. Three Dimensional Digital Image Correlation for In-situ Warpage Measurement” JEDEC 14-1 Reliability Committee, Web Conference, December 3, 2003
8. “Packaging Solution in High Power Laser Application”, Invited Seminar, Corning Inc., Corning, NY, October 1, 2003.
9. “Reliability Impacts of Pb-Free Solders in Chip Interconnects”, invited seminar, Samsung Electronics, Korea, August 19, 2003.
10. “Systematic Reliability Assessment on Electronic Packaging”, Invited Seminar, Teradyne Inc., North Reading, MA, August 5, 2003.
11. Panelist for IBM Academy of Technology in Yield Learning Conference, IBM Headquarter, Armonk, NY 1998.
12. Invited seminar for Engineering Seminar Series, Clemson University, Clemson, SC, October 1996.

**Tutorial**

1. “Optomechanics Tools for Packaging and Reliability,” *ASME InterPACK* Conference, July 2011.
2. “Photomechanics in Microelectronics, MEMS, and MOEMS Packaging” in *ASME ITHERM Conference 2006*, May 2006.
3. “Photomechanics in Microelectronics, MEMS, and MOEMS Packaging” in *ASME InterPACK Conference 2005*, July 2005.
4. “Moiré Interferometry” in JEDEC 14-1 Reliability Committee Meeting, Burlington, VT, June 10, 2003.

**e. Patents and Invention Disclosures**

US 6,627,998 B1, “Wafer Scale Thin Film Package”, 2003.

US 6,347,901 B1, “Solder Interconnect Techniques”, 2002

US 6,288,900 B1, “Warpage Compensating Heat Spreader”, 2001

US 6,291,776 B1, “Thermal Deformation Management for Chip Carriers”, 2001

Reworkable Grid Reinforced Package, IBM Technical Disclosure Bulletin (TDB), 1999.

Improved Small Outline Nolead (SON) Package, IBM Technical Disclosure Bulletin (TDB), 1997.

**f. *Contracts and Grants***

***Total : $4,320,000***

**External Funding - $3,400,000**

Co-PI, Electronic interconnect reliability under multiple loading conditions,

Universal Instrument, 01/15–06/15, $36,600 (50%)

PI, Deflection and Strain Response Measurement of Corning Gorilla Glass during Ball Drop,

Corning, 11/14-06/15, $25,000 (100%)

PI, Joint Research in Digital Imaging Correlation and Applications

Advanced Semiconductor Engineering, 07/14-06/15, $60,000

PI, Investigating Temperature and Time Dependent Stress Relaxation Behavior of MEMS Packages and Packaging Materials,

Analog Device, Inc., 07/14-07/15, $148,000 (100%)

Co-PI, Electronic Assembly Vibration Testing, Interconnect Failure Detection, and Finite Element Modeling,

Universal Instrument, 01/14–12/14, $159,257 (33%)

Co-PI, An Optimization Study of Multiple Gantry Surface Mount Placement Machines,

Samsung Techwin, 01/14–12/14, $105,000 (50%)

PI, Advanced Package and Material Research,

Analog Device, 08/13–07/14, $99,650 (100%)

PI, Large Format Digital Correlation Metrology System, simulation & modeling and their Application to Electronic Components including Wafers,

Advanced Semiconductor Engineering, 04/13–03/14, $50,000 (100%)

PI, Advanced Package and Material Research,

Analog Device, 09/13–12/13, $16,500 (100%)

PI, Abnormal Signal for MEMS Oscillator,

Sands9, 06/12–04/13, $79,500 (100%)

PI, Advanced Package and Material Research,

Analog Device, 06/12–04/13, $69,500 (100%)

PI, Chip-Package Interactions on 3D-IC Learning Vehicle,

SEMATECH, 06/12–04/13, $225,025 (34%), Co-PI: B. Murray, B. Sammakia

PI, Underfill and Thermal Management,

SEMATECH, 06/12–12/12, $75,026 (50%), Co-PI: B. Sammakia

Co-PI, Investigations on Direct Copper Bonding as Method of Interconnection for Multi-Tier Chip / Wafer Stacking,

SEMATECH, 05/12–12/12, $74,004 (33%) PI: J. Cho

PI, Impact Response of Glass Substrate,

Corning, 11/10–03/12, $74,004 (100%)

PI, Investigating Temperature and Time Dependent Stress Relaxation Behavior of MEMS Packages and Packaging Materials,

Analog Device, 10/10–11/11, $73,321 (100%)

PI, Viscoplastic Material Characterization for MEMS,

Analog Device, 02/09–01/10, $67,600 (100%)

PI, Development of In-situ and Full-field Deformation Analysis Methodology for a Mobile Phone under Drop Shock,

Samsung, 02/08–11/08, $70,000 (100%)

PI, Viscoplastic Material Characterization for MEMS,

Analog Device, 01/08–12/08, $59,269 (100%)

PI, Viscoplastic Material Characterization for MEMS,

Analog Device, 09/06–08/07, $59,269 (100%)

PI, Development of an Automated, In-situ, and 3-D Nano-Characterization System Using Digital Image Correlation,

Intel Corporation, 06/06 – 03/07, $125,000, (100%)

PI, Modeling Specific Support for Analog Device,

Analog Device, 05/06–05/07, $38,000, (50%), Co-PI: Bahgat Sammakia

PI, Development of In-situ and Full-field Deformation Analysis Methodology for a Mobile Phone under Drop Shock,

Samsung Electronics, 02/06–11/06, $40,000, (100%)

PI, Fiber Coating with Low Friction Materials,

Advanced Design Consulting/ONR, 08/04-11/05, $14,000, (100%)

PI, Design, Packaging, and Reliability Guideline for Safe & Arm,

ONR, 05/05-09/06, $500,000, (14%) Co-PI: B. Sammakia, J. Pitarresi,

PI, Aircraft Structural Integrity Program,

Boeing, 03/05-06/07, $499,000, (100%)

PI, Design Guidelines for Multiple Stack Packages,

Samsung Electronics, 01/05-12/05, $20,000, (100%)

PI, Characterization of MEMS Materials and Evaluation of Thermo-Mechanical Behavior of MEMS Packages,

Analog Device, 02/05-05/06, $52,312, (100%)

PI, 3-D Wafer Level Packaging in Harsh Environments,

NASA/Infotonics Center, 04/04-09/05, $100,000, (50%), Co-PI: G. Lehman

Collaborator, Transuranic Aqueous Metal Ion Sensor Systems with Wireless Communication for Discrete Monitoring of Nuclear Materials,

National Nuclear Security Administration, DOE, 08/05-09/07, $450,000, (25%)

Co-PI, Mechanical Analysis and Reliability in Microfluidic Device Packaging,

Xerox Corp., 08/04-08/07, $60,000, (50%), PI: H. Ackler

PI, Warpage Analysis of the PBGA Packages,

Multiple Sponsors, 03/05-06/06, $13,600, (100%),

PI, Reliability Analysis of a Micro BGA Interconnect,

Universal Instrument, 05/04-12/04, $7,000, (100%)

PI, Reliability Impact of the Power Cycling,

Samsung Electronics, 01/04-12/04, $20,000, (100%)

**Internal (SUNY) Funding - $920,000**

PI, Design Guideline of 3D Packaging

IEEC, 07/14–06/15, $55,000, (100%)

PI, Through Glass Via (TGV) Interposer Reliability Testing

IEEC, 07/13–06/14, $50,000, (100%)

PI, Through Glass Via (TGV) Interposer Reliability Testing

IEEC, 07/12–06/13, $50,000, (100%)

PI, Universal TGV Reliability Test Vehicle Using a Glass Interposer and Glass Chips

IEEC, 07/11–06/12, $50,000, (100%)

PI, Low-k Flip Chip Package Chip-Package Interaction

IEEC, 07/10–06/11, $50,000, (100%)

PI, Characterization of CZT Crystal Strength and Measurement of Processing and Packaging Stress for the micro Interconnect

IEEC, 07/09–06/10, $60,000, (100%)

PI, Investigation of Chip-Package Interaction- for Flip Chip Solder and low-k Layer,

IEEC, 07/08–06/09, $50,000, (100%)

PI, Predictive Model of Moisture Behavior and Its Reliability Impact on Microelectronics and MEMS - Crack Growth Model during Reflow and Reliability Testing,

IEEC, 07/07–06/08, $50,000, (100%)

PI, Membrane Wrinkling Analysis for Flexible Electronics,

CAMM, 01/07–12/07, $60,000, (100%)

PI, Probe Pin Wear-out Analysis of Sn Pad,

Analog Device/Integrated Electronics Engineering Center(IEEC), 03/06–11/06, $40,000, (100%)

PI, Understanding the CuOSP on Pb-Free Solder Pads for Drop Impact,

StatsChipPAC/IEEC, 05/06–06/07, $40,000, (100%)

PI, Membrane Wrinkling Analysis for Flexible Electronics,

IEEC, 07/06–06/07, $60,000, (100%)

PI, Predictive Model of Moisture Behavior and Its Reliability Impact on Plastic Encapsulated Microelectronics and MEMS,

IEEC, 07/06–06/07, $25,000, (100%)

PI, Prediction of Electromigration Failure of Various Pb-Free Solder/Pad Combinations, IEEC, 07/05-06/06, $50,000, (100%)

PI, Development of a High-Sensitivity Three Dimensional In-Situ Measurement Tool for Small Scale Devices and Packages,

IEEC, 07/04-06/05, $60,000, (100%)

Co-PI, Mechanical Shock/Drop Performance of Packaging Interconnects: Modeling and Measurement,

IEEC, 07/04-06/05, $60,000, (50%), Co-PI: J. Pitarresi

PI, Development of Higher Sensitivity Infra-Red Fizeau Interferometer (IRFI) for Real-Time Out-of-Plane Deformation Measurement,

IEEC, 07/03-06/04, $50,000, (100%)

PI, Enhancement of Adhesion for Diffraction Grating,

Photomechanics/Strategic Partnership for Industrial Resurgence (SPIR), 10/02-12/03, $60,000 (including equipment donation), (100%)

**g. *Reviewing Activities for Journals and Other Publications***

Journal of Composite Materials

Journal of Intelligent Materials and Systems

ASME Journal of Electronic Packaging

Engineering Fracture Mechanics

International Journal of Fracture

Experimental/Numerical Mechanics in Electronics Packaging

IEEE Transaction on Advanced Packaging

IEEE Transaction on Components and Packaging Technologies

IEEE Transaction on Electronics Packaging Manufacturing

Optics and Lasers in Engineering

**h. *Others***

Evaluated a grant proposal of Cooperative Grants Program 2006 for U.S. Civilian Research and Development Foundation (CRDF), 2006.

Introduced StatsChipPAC to Integrated Electronics Engineering Center (IEEC) as a Corporate Member, 2005

Introduced Samsung Electronics to Integrated Electronics Engineering Center (IEEC) as a Corporate Member, 2003

1. **Teaching, Mentoring, and Advising**
2. ***Courses Taught*  (Overall teaching evaluation: 3.5 in “4” point scale)**

**Undergraduate Courses:**

Mechanics of Deformable Bodies, F04 (2.32)

Analytical Methods F12

Finite Element Analysis, S04 (3.28), S05 (3.43), S06 (3.28), S07, S08, S09, S11,

S12, S13, S14, S15

**Graduate Courses:**

Mechanics of Composite Materials, S03 (3.60), S04 (3.50), S05 (4.00), S06 (3.77), S07, S08, S09, S11, S12, S14, S15

Finite element Analysis, S04 (3.80), S05 (3.54), S06 (3.74), S07, S08, S09, S11,

S12, S13, S14, S15

Fracture Mechanics, F03 (3.27), F05 (N/A), F07, F09, F14

Advanced Nonlinear FEA, F02 (2.94), F04 (3.51), F06 (N/A), F08 (N/A), F11 (N/A)

Intro. to Electronics Packaging, S03 (N/A), S04 (N/A), S05 (N/A), S06 (N/A), S07, S08, S09 (Solid Mechanics and Photomechanics (6 hours))

Experimental Mechanics, F06 (N/A)

1. ***Course and Curriculum Development***

**New Graduate Courses Development**

ME/MTLE 520: Mechanics of Composite Materials

The course was developed for the regular graduate curriculum in 2003 and it has been offered every year. This course introduces the concept and advantage of composite materials to graduate students and advanced senior students.

ME610: Fracture Mechanics

The course was developed for the regular graduate curriculum in 2003 and it has been offered every other year. This course teaches the concept of failure of materials and structures due to fracture. It covers the theory of linear elastic fracture mechanics (LEFM) and its application. As well as Elastic-plastic fracture mechanics (EPFM).

ME618: Advanced Nonlinear FEA

The course was developed for the regular graduate curriculum in 2002 and it has been offered every other year. The objective of this course is to foster an understanding of the nonlinearities in structural mechanics. Starting from the theory of various nonlinearities, students will have a chance to practice the knowledge in practical engineering problems using commercial finite element analysis software.

ME580A: Experimental Mechanics

The course was developed for the graduate curriculum in 2006 and it is planned to offer every year. This course introduces currently used experimental techniques, both destructive and non-destructive, in solid mechanics to graduate students and advanced senior students. It covers optical deformation measurement tools including Shadow Moire, 3D Digital Image Correlation, Moire Interferometry, High Speed Cameras, and Wyko Profilometry.

**Research Laboratory Development**

The Opto-mechanics and Physical Reliability Laboratory (<http://me.binghamton.edu/O.M.R.L/Index.htm>) has been expanded from the existing infrastructures. The laboratory was designed to meet the ever-increasing demand for quantitative deformation data in micro to nano-meter scale. In 2011, the laboratory was moved to the Applied Mechanics Suite in the new Engineering and Science Building. The lab is equipped with various classical and modern photomechanics tools for experimental studies of multi-material miniature structures, specifically microelectronics packaging materials and subassemblies. The techniques that are routinely practiced in the laboratory include digital image correlation in conjunction with micromechanical testers and high speed cameras. The laboratory is being utilized for undergraduate/graduate teaching and on-going research activities.

1. ***Advising: Research Direction***

**Undergraduate**

1. Maxwell Morrison Graduated in May 2006 Medical School

2. Brett Lotito Graduated in May 2006 Laser Corp.

3. Wenwei Rong Graduated in May 2006 MS in Binghamton University

4. David Ketcher Graduated in May 2005 Lockheed Martin/MS in Binghamton

5. Oberon Deitmann Graduated in May 2005 Consultant

6. Wei Chak Luk Graduated in May 2007

7. Hohyung Lee Graduated in May 2010 MS in Binghamton University

7. Advised Senior Project Team:

’03-’04, “FADEC Life Monitoring Program-Temperature”, Sponsored by BAE Systems, Won the first prize and recognized in Graduation Ceremony

’04-’05, “FADEC Life Monitoring Program-Shock/Vibration”, Sponsored by BAE Systems

’06-’07, “Condition Based Maintenance Survey”, Sponsored by Raymond Corp.

’07-’08, Sponsored by Lockheed Martin.

’11-’12, ASME Relay Team

**Master’s**

Completed:

1. Izhar Ahmed Graduated in Dec. 2004 Corning

2. Rahul Joshi Graduated in Dec. 2004 Akustica

3. Ganesh Iyer Graduated in Dec. 2004 Six Sigma Inc.

4. Karthik Raghunathan Graduated in 2005 Corning

5. Ramji Dhakal Graduated in Jun. 2005 Ph.D. in Binghamton Univ.

6. Chirag Shah Graduated in May 2007 Apple

7. Aaron Reichman Graduated in May 2007 Intel Corp.

8. Khalid Umar Graduated in May 2007 Boston

9. Da Yu Graduated in May 2008 Apple

10. Jaebok Kwak Graduated in Aug. 2008 Samsung Electronics

11. Dong-Gun Lee Graduated in Aug. 2009 Korea Inst. Of Machinery

12. Kyung-Taik Park Graduated in Aug. 2009 Manager

13. Hyojeong Jeon Graduated in Aug. 2009 Lecturer in College Prep School

14. Hohyung Lee Graduated in May 2013 Ph.D. in Binghamton Univ.

15. Claire Coble Graduated in May 2013 Corning

16. Quang Nguyen Graduated in May 2013 Ph.D. in Auburn University

17. Rohit Bhosle Graduated in May 2014 Zimmer Medical

18. Charandeep Singh Graduated in May 2014 Ph.D. in Binghamton University

On Progress:

1. Junghoon Baek 2nd Year Expected to Finish in May 2016

**Doctoral**

Completed:

1. Zhenming Tang Graduated in May 2008 Google

2. Ramji Dhakal Graduated in Aug. 2008 Microsoft

3. Hongchul Lee Graduated in May 2009 Aero Tech Res. Inst., Airforce

4. Haojun Zhang Graduated in Dec 2010 Global Foundries

5. Abdullah Al-Yafawi Graduated in Dec 2010 Bionics

6. Tung Nguyen Graduated in Dec 2010 Microsoft

7. Jae Kwak Graduated in Dec 2010 Samsung Electronics

8. Dongmyung Suh Graduated in Dec 2011 Pacific Northwest Natl. Lab

9. Hoyong Lee Graduated in May 2012 L. Colonel, Korean AirForce

10. Da Yu Graduated in July 2012 Apple

11. Seil Baek Graduated in Dec. 2012 L. Colonel, Korean AirForce

12. Liang Xue Graduated in Dec 2013 Microsoft

13. Yeonsung Kim Graduated in Aug 2014 Analog Device Inc.

14. Dapeng Liu Graduated in Dec 2015 Global Foundries

On Progress:

1. Ah-Young Park 4th Year Expected to finish in May 2016

2. Hohyung Lee 4th Year Expected to finish in May 2016

3. Shuai Shao 3rd Year Expected to finish in Aug. 2016

4. Ruiyang Liu 3rd Year Expected to finish in Aug. 2016

5. Yuling Niu 3rd Year Expected to finish in Aug. 2017

6. Jing Wang 3rd Year Expected to finish in Aug. 2017

7. Huayan Wang 3rd Year Expected to finish in Aug. 2017

8. Charandeep Singh 2nd Year Expected to finish in Dec. 2017

9. Van Lai Pham 1st Year Expected to finish in Dec. 2018

**Post Doctoral Fellow**

Completed:

1. Soonwan Chung 2005-2007 Samsung Electronics

2. Changsoo Jang 2006-2007 Apple

3. Jongman Kim 2006-2007 Samsung Electric

4. Jia Gao 2005-2006 Analog Device Inc.

5. Shijun Yu 2014 Amazon

***d. Thesis Committee Membership (as a committee member)***

Master’s

1. Jia Gao Graduated in May ‘03
2. Hong Jiang Graduated in May ‘03
3. Fatih Helvaci Graduated in May ‘04
4. Satish Parupalli Graduated in May ‘04
5. Mihir Shetye Graduated in May ‘04
6. Sandeep Makhar Graduated in Aug. ‘06
7. Luke Wentlent Graduated in May ‘12
8. Ajinkya Ranade Expected to graduate in Aug. ‘12

Doctoral

1. Jia Gao Graduated in 2005
2. Mihir Shetye Graduated in 2006
3. Martin Anselm Graduated in 2011
4. Mahmoud Ibrahim Graduated in 2012
5. Chien-Yi Peng Expected to graduate in May ‘14

**4. SERVICE**

***a. Professional***

**Offices and Committee Membership Held in Professional Organizations**

1. ASME EPPD K-16 Committee Vice President, 2015-present
2. ASME EPPD K-16 Committee Secretary, 2013-2015
3. Associate Editor, Journal of Electronic Packaging, ’09-present
4. Division Chair, Electronic Packaging Division, Society for Experimental Mechanics, ’05-‘10
5. Division Representative, Electronics and Photonics Packaging Division, in *ASME IMECE ‘07*
6. General Affairs Director of 35th KSEA (Korean-American Scientists and Engineers Association) Executive Committee, ‘06-‘08.
7. Reliability Committee Member of ECTC ’07-present
8. Vice Division Representative of Electronic and Photonics Packaging Division in *ASME IMECE ‘06*
9. Secretary of “Electronic Packaging” Council of *Soc. of Experimental Mechanic*s, ‘03-‘05
10. JEDEC 14-1 Reliability, Co-authored the “Package flatness measurement specification”, 2004-present.
11. Co-Chair of iNEMI Roadmap Technical Work Group of “Modeling, Simulation and Design Tools”, 2004-2010
12. Mentor of Semiconductor Research Corporation (SRC) Research Task 1998-2002

12. IBM Fellowship Mentor, 1997-2000.

**Conference/Symposium Organization**

1. Track Chair of Mechanics in ITHERM 2014.
2. Track Chair of Tutorial in InterPACK *2011*.
3. Track Chair of Poster Track in ASME/ITHERM *2008.*
4. Electronics Packaging Division Representative of *ASME IMECE 2007.*
5. Track Chair of Student Poster in *InterPACK 2007.*
6. Track Chair of Emerging Technology in *ASME/ITHERM 2006.*
7. Track Chair of MEMS Packaging and Reliability in *ASME IMECE 2005.*
8. Review and Paper Selection Committee of *Int. Reliability Physics Symposium 2005,* March 2005*.*
9. Co-Organizer of the *1st International Symposium on Optical Methodologies and Metrologies for Microelectronics and Photonics*, Costa Mesa, CA, June 8-9, 2004.
10. Session chair in the conference of ASME/*ITHERM 2006.*
11. Session chair in the conference of *Soc. Of Experimental Mechanics 2006.*
12. Session chair of *InterPACK 2005.*
13. Session chair in the conference of ASME/*ITHERM 2004.*
14. Session chair in the conference of *Soc. Of Experimental Mechanics 2004.*
15. Session chair in the conference of '95 *American Society for Composites, 1995.*

**Consulting Activities**

IBM Microelectronics, Intel Corporation, GE Global Research, Microsoft,

Endicott Interconnect Technology, Universal Instruments, Analog Devices Inc.

NEC Electronics America, Samsung Electronics, StatsChipPAC, Trilion Quality Systems

Photomechanics Inc., Maxim Inc., ESM Technologies Inc., Tessera, Xilinx, Advanced

Semiconductor Engineering

***b. Campus***

Department

Chair – Faculty Search Committee (’12, ‘13)

Member – Faculty Search Committee (’14-’15)

Interim Director - Graduate Studies Committee (’04, ’08)

Member - Graduate Program Committee (’02-’04, ’06-‘12)

Member - Undergraduate Program Committee (’05-’06)

Member - Faculty Search Committee (’03-‘04”)

Member - Computer Committee (’02-’06)

Member - Web Restoration Ad-hoc Committee (’04-’05)

College/University

Member – Roadmap Committee, International Collaboration (‘13)

Member – All-University Personnel Committee (elected ’12,’13, ‘14)

Member - Faculty Senate (’14-‘15)

Member - Faculty Senate Execute Committee (’12)

Member - Watson School of Publication Committee (’10-‘12)

Member - Watson School of Engineering Computer Committee (’03-‘06)

Member – University wide International Collaboration (’09-’12)