14th International Conference on Reliability and Stress-Related Phenomena in Nanoelectronics – Experiment and Simulation ("Stress Workshop")
Dresden 2016

Monday, 30th May 2016

	Time	Speaker	Title
Session 1: Stress-related phenomena and reliability in micro- and nanoelectronics Chair: Ehrenfried Zschech			
	08:45	*Ehrenfried Zschech, Chair*	*Opening remarks*
T1	09:00	Paul Ho, UT Austin/TX, USA	Evolution of Interconnect Reliability Research: From Micro- to Nanoelectronics
T2	09:30	Jim Lloyd, SUNY Albany/NY, USA	Physical Models for BEOL Reliability in Nanoelectronic Devices
T3	10:00	Han-Ping Pu, TSMC, Taiwan	Multi-Scale Simulation for CPI Stress Induced Carrier Mobility Shift in Advanced Si Nodes
10:30 - 11:00		*Break*	
Session 2: Impact of stress on device properties Chair: Andreas Aal			
T4	11:00	Manfred Reiche, Max Planck Institute Halle, Germany	Impact of Defect-Induced Strain on Device Properties
T5	11:30	Ellen Hieckmann, Technical University Dresden, Germany	Luminescence Behaviour of Single-crystalline Silicon in the Presence of Internal Strains
T6	12:00	Thomas Nuytten, IMEC Leuven, Belgium	Stress Measurements in Semiconductor Devices using Nano-focused Raman Spectroscopy
T7	12:30	Tengfei Jiang, University of Central Florida/FL, USA	Microstructure Evolution and Reliability Impact from Nano-interconnects to Through-Silicon Vias
13:00 - 14:30		*Lunch*	
Session 3: Robustness in micro- and nanoelectronics: From design to application Chair: Xiaopeng Xu			
T8	14:30	Shoji Kamiya, Nagoya Institute of Technology, Japan	Possible Strategy toward a Design Scheme to Avoid Catastrophic Failure in Interconnect Structures under Chip Package Interaction
T9	15:00	Christoph Eberl, Fraunhofer IWS Freiburg, Germany	Microstructural Instability of Nanostructured Metals under Cyclic Stress
T10	15:30	Armen Kteyan, Mentor Graphics, Fremont/CA, USA	Analysis of the Effect of TSV-induced Stress on Device Performance by Direct Strain and Electrical Measurements, and FEM Simulations
T11	16:00	Andreas Aal, Volkswagen, Wolfsburg, Germany	Intermittent Functional Loss of Non-Degraded Advanced Semiconductor Technology based Products for Harsh Environments - Causes, Effect Reproducibility, Mitigation Concepts
	17:00	***Chair: Martin Gall***	***Poster session***
	19:00		***BBQ***

Tuesday, 31st May 2016

	Time	Speaker	Title
Session 4: X-ray imaging for quality control Chair: Paul Ho			
T12	09:00	Ehrenfried Zschech, Fraunhofer IKTS Dresden, Germany	X-ray Techniques for 3D metrology and Diagnostics - Status and Outlook
T13	09:30	Henry Proudhon, MINES ParisTech, France	Small Fatigue Cracks in 3D Experimental Microstructures
T14	10:00	Sven Niese, AXO Dresden, Germany	Full-field Hard X-ray Microscopy and Tomography for in-situ Mechanical Testing of BEOL Structures
10:30 - 11:00		*Break*	
Session 5: X-ray diffraction: Structure, texture and stress Chair: Olivier Thomas			
T15	11:00	Wenbing Yun, Sigray, Concord/CA, USA	X-ray Microdiffraction with Structured Illumination for Strain Measurement in Nanoelectronics
T16	11:30	Olivier Thomas, Aix Marseille University, France	Strain and Lattice Orientation Mapping using Advanced X-ray Nano-Diffraction
T17	12:00	Cev Noyan, Columbia University/NY, USA	Energetics of Recrystallization in Electroplated Copper Thin Films and Effects of Texture
T18	12:30	Christoph Kirchlechner, Max-Planck-Institut Düsseldorf, Germany	Synchrotron Based µLaue Diffraction to Probe Plasticity at Interfaces
13:00 - 14:00		*Lunch*	
	14:00	***Hiking tour in Saxonian Switzerland***	
	18:00	***Chair: Martin Gall***	***Poster session***
	20:00		***Conference Dinner***

Wednesday, 1st June 2016

	Time	Speaker	Title
Session 6: Modeling and Simulation Chair: Reinhold Dauskardt			
T19	09:00	Valeriy Sukharev, Mentor Graphics, Fremont/CA, USA	An Accurate Compact Modeling - A Key Component of the Full-Chip Verification Methodology: EM and low-k TDDB
T20	09:30	Xiaopeng Xu, Synopsys, Mountain View/CA, USA	Modeling Material Plastic and Viscous Flow Effects in TSV-middle and Backside TSV-last Processes
T21	10:00	Hajdin Ceric, University Vienna, Austria	TCAD Approach for the Assessment of Interconnect Reliability
10:30 - 11:00		*Break*	
Session 7: Micro and nanomechanics Chair: Jon Molina			
T22	11:00	Reinhold Dauskardt, Stanford University, Palo Alto/CA, USA	Molecular Origins of Elastic and Thermal Expansion Asymmetry in Organosilicate Dielectric Materials
T23	11:30	Han Li, Intel, Portland/OR, USA	Experimental study of crack behavior and fundamental fracture properties of on-chip interconnects
T24	12:00	Andre Clausner, Fraunhofer IKTS Dresden, Germany	Comparative Study on Different Techniques for the Determination of Thermo-Mechanical Strain and Stress in Silicon Close to Copper TSVs
T25	12:30	Ude Hangen, Hysitron Inc., Minneapolis/MN, USA and Aachen, Germany	Mechanical Metrology for Cu Bumps
13:00 - 14:00		*Lunch*	
Session 8: Novel stress measurement approaches Chair: Valeriy Sukharev			
T26	14:00	Dietmar Vogel, Fraunhofer ENAS Chemnitz, Germany	Reliable Intrinsic Stress Measurement by FIB Ion Milling for Industrial Purposes
T27	14:30	Reyes Elizalde, Ceit, Donostia-San Sebastián, Spain	Assessment of Elastic Properties of Very Thin Films through Wrinkles Induced by Residual Stresses
	15:00	*Ehrenfried Zschech, Chair*	*Closing remarks*

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Monday, 30th May and and Tuesday, 31st May 2016 - Poster session

P1	Puyoo	Piezo-Tunneling Strain Gauges Developed with a Low Temperature Process
P2	Machani	Finite Element Simulation Support for Critical Stack Qualification – An Industry Perspective
P3	Schneegans	Thermal Stress Balancing of Front Side and Back Side Metallization to Support Solder Die Attach
P4	Burssens	Control Structure to Monitor Residual Strain
P5	Tan	Electromigration Recovery Effect Modeling and Impacts on VLSI Reliability Optimization
P6	Escoubas	Effect of the Temperature on the Strain Distribution induced in SOI Photonic Substrate by Copper Filled TSVs, using Advanced Scanning X-ray Nanodiffraction
P7	André	Ultra-low-Power 130nm SOI CMOS Smart Sensor for in-situ Mechanical Stress in SiP and SoC Applications
P8	Reisinger	Residual Stress Gradient Investigation of GaN Heterostructures Studied by FIB and TEM Techniques
P9	Kraatz	Positron Annihilation Lifetime Spectroscopy Study of Self-assembled Porous low-k Films
P10	Garitagoitia Cid	Non-Damaging Characterization of ULK Materials with Low Voltage Scanning Electron Microscopy (LVSEM) and the EsB Detector
P11	Liao	In-Situ Transmission Electron Microscopy on Stretching Graphene Ribbons Patterned by Focused Gallium Ion Beams and Focused Electron Beams
P12	Huang	FIB Preparation of Silicon: Amorphization and Milling Rate Quantification
P13	Muehle	Estimation of Medium-range Strain in 3D-stacked Integrated Circuits using Energy Filtered CBED
P14	Sander	Advanced Characterization Methods for Effective Materials Properties of BEoL Structures
P15	Jasiński	Extraction of Border/Bulk Traps Parameters Based on Admittance Measurements

P16	Schulmeyer	Improved Failure Analysis of Electronic Packages by Combining X-ray and Scanning Electron Microscopy
P17	Paszkiewicz	Stress and Induced Electric Polarization Modeling in Polar, Semi-polar and Non-polar AlIIN Heterostructures
P18	Banerjee	Strain Analysis for Reconfigurable Silicon Nanowire Devices
P19	Hecker	Crack Propagation Analysis for on-chip Cu/Dielectric Structures using Double-Cantilever Beam (DCB) and Modified Edge Lift-off Tests (MELT)
P20	Islam	Access to the Thermo-mechanical Deformation Behavior of Thin Films During Ultra-fast Pulsed Heating
P21	Kutukova	Crack Path Localization in Cu/low-k Stacks during micro DCB Tests using nano XCT
P22	Weide-Zaage	Thermo-Mechanical Simulation of a Multilevel Metallization System
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Conference Location: Hotel Elbresidenz Bad Schandau

Sponsors: Intel, Hysitron, FEI, Carl Zeiss, sigray, AXO Dresden, Huber Diffraktionstechnik

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