17th International Conference Reliability and Stress-Related Phenomena in Nanoelectronics „Stress workshop“

Conference Programm

Monday 24th April 2023

		Chair: Ehrenfried Zschech	Session 1: Reliability in micro- and nanoelectronics
	08:45	Ehrenfried Zschech deepXscan, Dresden, Germany	*Opening remarks*
T1	09:00	Sandrine Lhostis STMicroelectronics, France	*New reliability challenges for 3D integration stacking using hybrid bonding*
T2	09:30	Susann Rothe Technical University Dresden, Germany	*Combined Modeling of Electromigration, Thermal and Stress Migration in AC Interconnect Lines*
T3	10:00	Ingrid de Wolf, Vladimir Chairman IMEC, Leuven, Belgium	*FinFETs: Sensing and feeling mechanical stress*
10:30 – 11:00		Break	
		Chair: Carl V. Thompson	Session 2: Impact of stress on device properties
T4	11:00	Kristina Kutukova deepXscan, Dresden, Germany	*In-situ nano-XCT study of the local energy release rate for crack propagation in advanced ICs*
T5	11:30	Pal Jen Wei Bruker, Taiwan	*Indentation-Induced Delamination and Adhesion Work Evaluation at Elevated Temperature in Semicon Industrial Cases*
T6	12:00	André Clausner Fraunhofer IKTS, Dresden, Germany	*Studying stress effects in transistor channels by nanoindentation with varied contact geometries*
T7	12:30	Reinhold Dauskardt Stanford University, Palo Alto/CA, USA	*Hybrid Dielectric Films for Device Technologies: Understanding Relationships between Molecular Structure, Processing and Function*
13:00 – 14:30		Lunch Break	
		Chair: Reinhold Dauskardt	Session 3: Robustness of engineered systems: From design to application
T8	14:30	Vikas Tapan Siemens, Munich, Germany	*Early architectural exploration with PAVE360*
T9	15:00	Hiroshi Nishikawa Osaka University, Japan	*Solid-phase bonding process using nanostructured surface for power devices in automotive*
	15:30	Chair: Kristina Kutukova	*Poster Session*
	17:00	Moderators: • Andreas Aal, VOLKSWAGEN • Oliver Aubel, GLOBALFOUNDRIES Key Contributors: • Joe McPherson • Günter Haas, Entegris • Tapan Vikas, SiemensEDA • Nir Sever, proteanTecs	*Podium discussion „Reliability of automotive electronics“* Context: *Upcoming hardware challenges on the way towards the Software-defined-Vehicle*
19:00		BBQ	

Tuesday 25th April 2023

		Chair: Christoph Gammer	Session 4: Materials characterization for device development and reliability engineering
T10	09:00	Iuliana Panchenko Technical University Dresden, Germany	*Hybrid bond and nanowired bump technologies for high density interconnect formation on wafer level*
T11	09:30	Olivier Thomas, Aix Marseille University, France	*Phase change materials for embedded memories: in situ investigation of crystallization behavior using synchrotron radiation*
T12	10:00	Ehrenfried Zschech, deepXscan, Dresden, Germany	*Controlled microcrack steering into toughened regions – What microelectronics can learn from nature?*
10:30 – 11:00		Break	
		Chair: Rodrigo Martins	Session 5: Degradation mechanisms and materials behavior
T13	11:00	Matthias Stecher Infineon Technologies, Munich, Germany	*Degradation mechanisms of 10kV-reinforced isolated gate drivers at high switching frequencies greater than 30kHz*
T14	11:30	Carl V. Thompson MIT, Boston/NY, USA	*Contrasting Stress Evolution During Lithiation and Delithiation of Different Electrode Materials for Thin Film Batteries*
T15	12:00	Robert Filipek AGH Krakow, Poland	*Tortuosity and Porosity in Electrochemical Systems – Computed Tomography Based 3D Transport Modelling*
T16	12:30	Jörg Acker Brandenburg University of Technology Cottbus-Senftenberg, Germany	*Reliability and Recycling of Battery Materials*
13:00 – 14:00		Lunch Break	
14:00		*Hiking tour in Saxonian Switzerland*	
17:30		Chair: Kristina Kutukova	*Poster Session*
20:00		Conference Dinner	

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Wednesday 26th April 2023

		Chair: André Clausner	Session 6: Micro- and nanomechanics
T17	09:00	Lionel Vignoud CEA-LETI, Grenoble, France	*Strains and stresses control in microelectronic devices: How to optimize the steps from design to manufacturing?*
T18	09:30	Daniel Nemecek TESCAN, Brno, Czech Republic	*Advancing nanoscale characterization of semiconductor devices by effortless 4D-STEM workflows*
T19	10:00	Christoph Gammer, ESI Leoben, Austria	*Recent advances in nanoscale strain mapping using 4D STEM*
10:30 – 11:00		Break	
		Chair: Olivier Thomas	Session 7: Reliability of organic electronics
T20	11:00	Rodrigo Martins Uninova Lisbon, Portugal	*Eco-Strategies for next generation electronics*
T21	11:30	Wiebke Langgemach Fraunhofer FEP, Dresden, Germany	*Processing flexible glass – thin film stress and its influence on glass durability*
T22	12:00	Karl Leo Technical University Dresden, Germany	*Organic semiconductors – from a lab curiosity to serious applications*
	12:30	Ehrenfried Zschech deepXscan, Dresden, Germany	*Closing remarks*
13:00 – 14:00		Lunch Break	

Poster session

Monday, 24th April 2023 15:30 and Tuesday, 25th April 2023 17:30

Poster	Author	Title
P1	Susann Rothe	*A Proactive Design Approach to Avoid Migration-Induced Failure in IC Interconnects*
P2	Verena Hein	*The Influence of the Interconnect Material on the Performance of a Highly Robust Metallization Layout*
P3	Stefan Weitz	*Micromechanical in-situ studies of on-chip interconnect stack structures using X-ray microscopy*
P4	Michael Reisinger	*Characterization of the thermo-mechanical behavior of Cu metallization in microelectronic applications*
P5	Tobias Ziegelwanger	*Local gradients of microstructure and residual stresses in Si device sidewalls separated by laser dicing*
P6	André Lange	*Investigating HCI and BTI degradation in 4H-SiC CMOS*
P7	Jolanta Janczak-Rusch	*Nanomultilayers for thermal management and micro-/nano-joining*
P8	Bastian Rheingans	*Thin-film transfer by nanopaste sinter-bonding*
P9	Bowen Zhang	*In-situ TEM study and nanomechanical characterization of fracture behavior in two-dimensional covalent organic frameworks*
P10	Thomas Langner/Jörg Acker	*Shaping the topography of solar wafers due to increased reactivity of lattice strained silicon*
P11	Thomas Langner/Jörg Acker	*Deposition of copper in lithium-ion batteries during the deep discharge process*
P12	Thomas Langner/Jörg Acker	*Degradation of Cathode Foils from Lithium-Ion Batteries in Humid Atmosphere*

BRUKER deepXscan HUBER Diffraction and Positioning Equipment SIEMENS TESCAN