

# Program WaferBond'22

## Conference on Wafer Bonding for Microsystems, 3D- and Wafer Level Integration

**WaferBond '22**

Conference on Wafer Bonding for Microsystems, 3D- and Wafer Level Integration

Schmalkalden / Germany

### SPONSORS

#### GOLD



#### SILVER



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Mask & Bond Service

### Tuesday 2022-10-04 Pre-Evening-Reception

17:00-21:00 Evening Reception VIBA Nougat-World Schmalkalden

### Wednesday 2022-10-05 1st Day WaferBond '22

09:00	R. Knechtel	Technical Chair & Local Organizer	Welcome and Opening
09:10	G. Baier	President Schmalkaden Univ. A.S.	Welcome by the Hosting Organisations and Introduction to Schmalkalden University of Applied Sciences
<b>Session 1 Fundamentals I</b> Chair: R. Knechtel			
09:20	V. Larrey	CEA LETI	<i>Invited: Silica water stress corrosion and its impact on bonding energy measurement</i>
09:50	K. Huynh	UCLA	<i>Reduction in Thermal Boundary Conductance of Direct Wafer Bonded GaN/Si Heterojunction Interfaces Annealed at High Temperatures</i>
10:10	Break		
<b>Session 2 Fundamentals II</b> Chair: F. Fournel and A. Sanz-Velasco			
10:40	T. Shimatsu	Tohoku University	<i>Invited: Atomic Diffusion Bonding of Wafers using Various Oxide Films</i>
11:10	A. Muraoka	Canon ANELVA	<i>Atomic Diffusion Bonding using AlN Films with High Electrical Resistivity</i>
11:30	M. E. Liao	UCLA	<i>Thermal Transport of Thinned and Chemical Mechanical Polished (201) <math>\beta</math>-Ga<sub>2</sub>O<sub>3</sub> Wafer Bonded to (001) Si</i>
11:50	S. Brun	SY&SE	<i>Invited: Impulse Current Bonding</i>
12:20	Lunch Break		
13:20	General Poster Flash Session	see Posters	Chair: R. Knechtel
<b>Session 3 Glass Bonding</b> Chairs: M. Wiemer and F. Niklaus			
13:50	A. Kulkarni	Fraunhofer ISIT	<i>Invited: Anodic Bonding of Silicon Lenses (Draft)</i>
14:20	U. Peuchert	Schott	<i>High precision special flat glass for permanent and temporary wafer bonding</i>
14:40	A. Sanz-Velasco	IMT	<i>Invited: Industrial Level Wafer bonding of glass substrates</i>
15:05	J. Zhang	Coming	<i>Recent Advances in Glass Wafer Fabrication and Wafer-to-Wafer Bonding at Corning</i>
15:25	Break		
<b>Session 4 Characterization and Metrology</b> Chairs: M. Petzold and R. Knechtel			
15:55	F. Fournel	CEA LETI	<i>Direct bonding wave characterization with non-transparent wafers.</i>
16:15	A. Thete	cosine	<i>A novel bond strength measurement tool to quantify the bond strength of mono-crystalline structured X-ray Silicon Pore Optics plates</i>
16:35	P. Czurratis	PVA Tepla	<i>New developments for high resolution and high throughput analysis using Scanning Acoustic Microscopy (SAM) for the defect characterisation and defect analysis</i>
16:55	see Posters		
17:05	Poster Flash: Metrology and Characterization		
17:30	Panel Discussion: Metrology for Wafer Bonding		
17:30	Social Event		
22:00	Guided Tour Schmalkalden Old Town - Dinner at Schmalkalden University of Applied Sciences - Laser Show		

### Thursday 2022-10-06 2nd Day WaferBond '22

<b>Session 5 Technology Integration of Wafer Bonding I</b> Chair: J. Amthor and S. Brun			
09:00	U. Schwarz	X-FAB	<i>Invited: Wafer Bonded Substrates for MEMS Fabrication</i>
09:30	G. Jo	KTH	<i>Wafer-level Hermetic Sealing of Silicon Photonic MEMS by Direct Metal-to-Metal Bonding</i>
09:50	E. Visker	IMEC	<i>Novel protective stack enables flexible backside processing</i>
10:10	Break		
<b>Session 6 3D-Integration</b> Chair: S. Wicht and L. Peng			
10:40	M. Pires	EVG	<i>Collective Die Bonding: Heterogeneous Integration</i>
11:00	J. Visker	IMEC	<i>Investigation of bond voids in SiO<sub>2</sub>/Cu hybrid bonding</i>
11:20	E. Deloffre	ST Microelectronics	<i>Industrialization of hybrid bonding for 3D technologies: how to secure mass production?</i>
11:40	J. Burggraf	EVG	<i>Hybrid Bonding of Heterogeneous Substrates</i>
12:00	Lunch Break		
<b>Session 7 Activation of Bonding Surfaces</b> Chair: M. Goorsky and T. Shimatsu			
13:00	S. Dewilde	IMEC	<i>Optimization of Cu/SiCN CMP process for surface preparation targeting W2W hybrid bonding</i>
13:20	A. Calvez	CEA LETI	<i>Impact of isopropanol (IPA) on silicon direct bonding defectivity</i>
13:40	C. Flötgen	EVG	<i>On the Role of Plasma Parameters on the Mechanism of Plasma-Activated Direct Wafer Bonding</i>
14:00	T. Suga	Meisei Univ.	<i>Surface Finishing of Diamond Substrates by Gas Cluster Ion Beam (GCIB) for their Surface Activated Bonding to WBG Semiconductors.</i>
14:20	Break		
<b>Session 8 Technology Integration of Wafer Bonding I</b> Chair: V. Larrey and A. Kulkarni			
14:50	A. Quellmalz	KTH	<i>Stacking Two-Dimensional Materials to Heterostructures by Adhesive Wafer Bonding</i>
15:10	J. Amthor	BOSCH	<i>Eutectic Bonding - Influences on the Waferbow</i>
15:30	K. Diex	Fraunhofer ENAS	<i>Thermo-compression bonding of palladium-passivated aluminium at wafer-level</i>
15:50	R. Knechtel	Technical Chair & Local Organizer	<i>Closing Remarks</i>
Lab Tour Clean Room: Schmalkalden University of Applied Sciences			

### General Posters

P1	M. Khan	X-FAB	<i>Micro-Transfer-Printing – a Wafer-Level Integration Technology for Advanced System Solutions in Semiconductor Wafer Foundry</i>
P2	P. Birkigt	Fraunhofer IOF	<i>Investigation of Non-Planar Direct Bonding on Spherical Lens Substrates and Related De-Bonding Issues</i>
P3	Th. Stöttinger	EVG	<i>AlGe wafer bonding in ultra-high vacuum environment</i>
P4	K. Abadie	CEA LETI	<i>Stressed Si/Si homo-structures manufacturing using surface activated bonding in temperature</i>
P5	Y. Han	IMEC	<i>Optimization of Wafer-to-Wafer Overlay for Hybrid Bonding</i>
P6	R. Knechtel	Schmalkalden Univ.o.A.S.	<i>Investigations of Chemical and Thermal Stabilities of Glass-Frit Materials for Advanced Technology Integration of Wafer Bonding</i>
P7	M. Fujino	AIST	<i>Interfacial properties of bonded niobium using surface activated bonding</i>
P8	M. E. Liao	UCLA	<i>Direct Wafer Bonding of 128° Y-cut LiNbO<sub>3</sub> to Sapphire</i>
P9	K. Onishi	Yokohama National Univ.	<i>Direct Bonding of Low Temperature Deposited Dielectric Films</i>
P10	O. Golim,	Alto Univ.	<i>Low temperature metal bonding at 150°C using CuInSn Transient Liquid Phase Wafer Bonding</i>
P11	K. Takeuchi	Meisei Univ.	<i>Effect of Interfacial Residual Water on Low Temperature Wafer Bonding</i>
P12	J. Liang	Osaka Met. Univ	<i>Fabrication of high-thermal-stability GaN/diamond junctions via intermediate layers</i>
P13	N. Rauch	Univ. Linz	<i>Model development and verification for spectroscopic ellipsometry analysis of plasma-activated Si wafers for direct wafer bonding.</i>
P14	A. Roshanghias	Silicon Austria Labs	<i>Wafer-level glass frit jetting as an alternative to screen printing</i>

### Posters Characterization and Metrology

P15	R. Knechtel	Schmalkalden Univ.o.A.S.	<i>Ultra Long Term Hermeticity Test at Glass Frit Bonded Wafers</i>
P16	H. Klingner	X-FAB	<i>Automatic Thermographic Inspection of Wafer Bonded Substrates with Sealed Vacuum Cavities</i>
P17	L. Oggioni	ST Microelectronics	<i>WADI image analysis software to control bonding quality</i>
P18	A. Ikili	IES, Univ Montpellier,	<i>Acoustic characterisation of bonding energy</i>
P19	A. Talneau	CNRS-C2N	<i>In-situ XPS characterization of N<sub>2</sub>-plasma activated Silicon surfaces: possible surface dipole evidencing for enhanced Si bonding</i>