

Day 1: Monday, 3 May 2021

Tutorials					
T1.1	10:00 11:30	Leak Test of Encapsulated Sensor Systems with the Test Medium Compressed Air J. Lapsien, CETA Testsysteme GmbH, Hilden (Germany)	T2.1	10:00 11:30	Wiegand Wires, Wiegand Effect & Wiegand Sensors T. Best, Fraba GmbH Posital, Köln (Germany)
T1.2	12:00 13:30	Testing of Gas and Humidity Sensors C. Tiebe, Bundesanstalt für Materialforschung und -prüfung (BAM), Berlin (Germany)	T2.2	12:00 13:30	Handheld Near-Infrared Spectroscopy: Realistic on-site Applications versus Empty Promises Heinz W. Siesler, University of Duisburg-Essen (Germany)
T1.3	14:00 15:30	Setting Standards for Indoor Air Quality Sensors Based on VOCs A. Schütze, Saarland University, Saarbrücken (Germany)	T2.3	14:00 15:30	Essentials of Finite Element Simulations for MEMS D. Platz, Technical University Wien, Wien (Austria)

16:00-18:00 **Opening Ceremony**

Chairs: G. Gerlach, Technische Universität Dresden, Dresden (Germany)
K. D. Sommer, Technische Universität Ilmenau, Ilmenau (Germany)

Opening Speech

Presentation of the AMA Innovation Award 2021

Plenary Talk 1:

New Opportunities for Measurement and Sensor Technology through Digitization

U. Kaiser, Endress+Hauser AG, Reinach (Switzerland), K.D. Sommer, Technische Universität Ilmenau, Ilmenau (Germany)

Color Index

Sensors and Instrumentation

IRS² Satellite Conference

Measurement Science

System of Units and Metrological Infrastructure

Conference Program

(as at 28 April 2021)

Day 2: **Tuesday, 4 May 2021**

Plenary Talks	
Chair:	G. Gerlach, Technische Universität Dresden, Dresden (Germany), K. D. Sommer, Technische Universität Ilmenau, Ilmenau (Germany)
08:45	Welcome General Chairs SMSI Conference
08:50	Greeting
	IMEKO - International Measurement Confederation, President EIT F. Härtig, IMEKO, Budapest (Hungary) / Physikalisch-Technische Bundesanstalt, Braunschweig (Germany)
09:00	Plenary Talk 2:
	From Sensors to Standards: How NIST on a Chip is Transforming International Metrology B. Goldstein, NIST - National Institute of Standards and Technology, Gaithersburg (USA)
09:45	Plenary Talk 3:
	On Model-based and Data-driven Algorithms - Towards Mature AI-enabled Systems W. Koch, Fraunhofer FKIE / University of Bonn (Germany)
10:30	Plenary Talk 4:
	Progress in Realising the Redefined Kelvin G. Machin, J. Pearce, National Physical Laboratory, Teddington (United Kingdom), M. Sadli, LNE-CNAM, Saint-Denis (France), J. Engert, Physikalisch-Technische Bundesanstalt, Berlin (Germany), R. M. Gavioso, Istituto Nazionale di Ricerca Metrologica, Torino (Italy)
11:15	Break

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Sensors and Instrumentation

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Day 2: Tuesday, 4 May 2021

Session A1 Piezoelectric High-temperature Sensors I (Special Session)		Session B1 Gas Sensors I		Session C1 IRS' Satellite Conference: Infrared Sensors		Session D1 Future Topics in Metrology (Special Session)	
Chair: Y. Suhak, Clausthal University of Technology, Goslar (Germany)		Chair: A. Schütze, Saarland University, Saarbrücken (Germany)		Chair: E. Manske, Technische Universität Ilmenau, Ilmenau (Germany)		Chair: S. Eichstädt, Physikalisch-Technische Bundesanstalt (PTB), Berlin (Germany)	
A1.1	11:30	B1.1	11:30	C1.1	11:30	D1.1	11:30
Catagangasite: piezoelectric single crystal for sensor applications at harsh conditions H. Schmidt, A. Sotnikov, R. Weser, Leibniz IFW Dresden, Dresden (Germany), B. Sorokin, Technological Institute for Superhard and Novel Carbon Materials, Moscow (Russia), Y. Suhak, H. Fritze, Clausthal University of Technology, Goslar (Germany)		Innovative Hydrogen Sensors for Fuel Cell Vehicles O. Kiesewetter, A. Kraußner, N. Kiesewetter, J. Müller, M. Bose, M. May, Umweltsensortechnik GmbH, Geratol OT Geschwenda (Germany)		Spatial Homogeneity of the Radiance of a Large-diameter Integrating Sphere in the SWIR Measured with an InGaAs Camera S. König, B. Gutschwager, I. Müller, R. Taubert, Physikalisch-Technische Bundesanstalt, Berlin (Germany)		GUM2ALA – Uncertainty Propagation Algorithm for the Adaptive Linear Approximation According to the GUM T. Dorst, T. Schneider, A. Schütze, ZeMA – Center for Mechatronics and Automation Technology gGmbH, Saarbrücken (Germany), S. Eichstädt, Physikalisch-Technische Bundesanstalt, Berlin (Germany)	
A1.2	11:50	B1.2	11:50	C1.2	11:50	D1.2	11:50
Oxygen Partial Pressure Dependent Electrical Conductivity of LiNb_{1-x}TaxO₃ Solid Solutions A. Kabir, Y. Suhak, H. Fritze, Clausthal University of Technology, Goslar (Germany), D. Roshchupkin, B. Red'kin, Russian Academy of Science, Moscow (Russia), S. Ganschow, Leibniz-Institut für Kristallzüchtung, Berlin (Germany)		Failure Analysis of Overloaded Coulometric Hydrogen Sensor A. Graff, W. Münchgesang, F. Altmann, Fraunhofer Institute IMWS, Halle (Germany), C. Hincinschi, T. Köhler, Technische Universität Bergakademie Freiberg, Freiberg (Germany), P. Sood, J. Zosel, M. Mertig, Kurt-Schwabe-Institut für Mess- und Sensortechnik Meinsberg e.V., Waldheim (Germany)		Thermopile Arrays for IR Imaging and Body Temperature Screening Applications J. Schieferdecker, M. Schnorr, B. Forg, F. Herrmann, C. Schmidt, W. Leneke, M. Simon, Heimann Sensor GmbH, Dresden (Germany)		Representing Semantic Information in Sensor Networks M. Gruber, S. Eichstädt, Physikalisch-Technische Bundesanstalt, Berlin (Germany)	
A1.3	12:10	B1.3	12:10	C1.3	12:10	D1.3	12:10
Obtaining and Investigation of the LiNbO₃, LiNbO₃:Mg, LiTaO₃ Nanopowders Doped with Pr ions U. Yakhnevych, L. Vasylechko, S. Hurskyj, O. Buryy, D. Sugak, Y. Zhydachevskyy, Lviv Polytechnic National University, Lviv (Ukraine), V. Sydoruk, A. Lakhnik, NASU, Kyiv (Ukraine), I. Syvorotka, Scientific Research Company 'Electron-Carat', Lviv (Ukraine), A. Suchocki, Institute of Physics PAS, Warsaw (Poland), Y. Suhak, H. Fritze, Clausthal University of Technology, Goslar (Germany)		Long-Term Monitoring of Gaseous Ammonia with a Semi-automatic Measuring Device K. Gawlitzka, S. Johann, M. Mansurova, H. Kohlhoff, C. Tiebe, J. Bell, M. Bartholmai, K. Rurack, Bundesanstalt für Materialforschung und -prüfung BAM, Berlin (Germany)		A Novel Approach to Model the Thermal-electrical Behavior of Pyroelectric Infrared Sensors R. Lehmkau, InfraTec GmbH, Dresden (Germany), J. Lieng, Technische Universität Dresden, Dresden (Germany)		Ensemble Learning for Computational Optical Form Measurement L. Hoffmann, I. Fortmeier, C. Elster, Physikalisch-Technische Bundesanstalt, Braunschweig/Berlin (Germany)	
A1.4	12:30	B1.4	12:30	C1.4	12:30	D1.4	12:30
Electrical and Electromechanical Properties of Single Crystalline Li(Nb,Ta)O₃ Solid Solutions up to 700 °C Y. Suhak, B. Jerliu, H. Fritze, Clausthal University of Technology, Goslar (Germany), S. Ganschow, Leibniz-Institut für Kristallzüchtung, Berlin (Germany), D. Roshchupkin, B. Red'kin, Russian Academy of Science, Moscow (Russia), S. Sanna, Justus Liebig University Gießen, Gießen (Germany)		A Humidity-independent Photoacoustic Sensor E. Ambra, G. A. Pang, C. Haish, Technical University of Munich, Munich (Germany)		Mobile Near Infrared Spectrometer with a MEMS-FPI Sensor A. Ivanov, A. Kulinna, Landshut University of Applied Sciences, Landshut (Germany)		Dynamic Calibration of Sensors with Exclusive Digital Output B. Seeger, T. Bruns, Physikalisch-Technische Bundesanstalt, Berlin (Germany)	
	12:50	Break					

Day 2: **Tuesday, 4 May 2021**

Session A2 Piezoelectric High-Temperature Sensors II (Special Session)			Session B2 Gas Sensors II			Session C2 IRS ² Satellite Conference: Thermal Imaging and Thermography			Session D2 Measurement Foundations I		
Chair: Y. Suhak, Clausthal University of Technology, Goslar (Germany)			Chair: A. Lloyd Spetz, University of Linköping, Linköping (Sweden)			Chair: T. Fröhlich, TU Ilmenau, Ilmenau (Germany)			Chair: E. Benoit, Université Savoie Mont Blanc, Chambéry (France)		
A2.1	13:30	Mechanisms of Anelastic Loss in Langasite at Temperatures from 113 K to 1324 K W. Johnson, National Institute of Standards and Technology, Boulder (USA), Y. Suhak, H. Fritze, Clausthal University of Technology, Goslar (Germany)	B2.1	13:30	Multiple Gas Detection by Dynamic Electrochemical Methods A. Ruchets, J. Zosel, Kurt-Schwabe-Institut für Mess- und Sensortechnik Meinsberg e.V., Waldheim (Germany), N. Donker, D. Schönauer-Kamin, R. Moos, University of Bayreuth, Bayreuth (Germany), U. Guth, M. Mertig, Technische Universität Dresden, Dresden (Germany)	C2.1	13:30	Laser Excited Super Resolution Thermal Imaging for Nondestructive Testing S. Ahmadi, J. Lecomagnon, P. Hirsch, M. Ziegler, Bundesanstalt für Materialforschung und -prüfung, Berlin (Germany), P. Burgholzer, RECENDT Research Center for Non-Destructive Testing, Linz (Austria), P. Jung, G. Caire, Technical University of Berlin, Berlin (Germany)	D2.1	13:30	Electric Field Meters – Application of the GUM C. Schierding, M. Thedens, M. Beyer, Physikalisch-Technische Bundesanstalt, Braunschweig (Germany)
A2.2	13:50	Housed Temperature Sensors Based on Piezoelectric Resonators for High-Temperature Applications M. Schulz, H. Fritze, Clausthal University of Technology, Goslar (Germany), F. Kohler, J. Wilde, University of Freiburg, Freiburg (Germany)	B2.2	13:50	177 Pulsed polarization on Au YSZ NO_x-sensors with and without catalytic layer N. Donker, D. Schönauer-Kamin, R. Moos, University of Bayreuth, Bayreuth (Germany), A. Ruchets, J. Zosel, Kurt-Schwabe-Institut für Mess- und Sensortechnik Meinsberg e.V., Waldheim (Germany), U. Guth, Dresden University of Technology, Dresden (Germany)	C2.2	13:50	2D-Photothermal Super Resolution with Sparse Matrix Stacking J. Lecomagnon, S. Ahmadi, P. Hirsch, M. Ziegler, Bundesanstalt für Materialforschung und -prüfung, Berlin (Germany)	D2.2	13:50	Uncertainty-Aware Sensor Fusion in Sensor Networks M. Gruber, S. Eichstädt, Physikalisch-Technische Bundesanstalt, Berlin (Germany), W. Pilar von Pilchau, J. Hähner, University of Augsburg, Augsburg (Germany), V. Gowtham, A. Willner, Fraunhofer FOKUS, Berlin (Germany), N. Koutrakis, J. Polte, Fraunhofer Institute IPK, Berlin (Germany), M. Riedl, ifak, Magdeburg (Germany)
A2.3	14:10	CTGS Based Sensor for In-Situ Gas Detection in Heat Treatment Processes S. Schroeder, H. Fritze, Clausthal University of Technology, Goslar (Germany), A. Strauß, P. Quadbeck, Fraunhofer Institute for Manufacturing Technology and Advanced Materials, Dresden (Germany)	B2.3	14:10	Impedimetric NO_x Sensor for Exhaust Applications with Internal Lambda Correction J. Herrmann, G. Hagen, J. Kita, R. Moos, University of Bayreuth, Bayreuth (Germany), F. Noack, D. Bleicker, CPK Automotive GmbH&Co. KG, Münster (Germany)	C2.3	14:10	Thermographic Method to Locate Concealed Defects in Exterior Wall Insulation Panels of Prefabricated Houses V. Putz, R. Schmidt, C. Kastl, Linz Center of Mechatronics GmbH, Linz (Austria), S. Haunschmid, Synthesa Chemie Gesellschaft m.b.H., Perg (Austria)	D2.3	14:10	Spectrometry of Pulsed Photon Radiation R. Behrens, H. Zutz, J. Busse, Physikalisch-Technische Bundesanstalt, Braunschweig (Germany)
A2.4	14:30	Acoustic Loss Contributions in Aluminium Nitride Piezoelectric Resonators up to 900°C I. Kogut, H. Fritze, Clausthal University of Technology, Goslar (Germany), I. Gamov, K. Irmischer, M. Bickermann, Leibniz-Institut für Kristallzüchtung, Berlin (Germany)	B2.4	14:30	Wireless Low-power Warning System for the Detection of Flammable Gases B. Bierer, O. Yurchenko, L. Engel, H. Pernau, Fraunhofer Institute IPM, Freiburg (Germany), D. Grgic, J. Wöllenstein, University of Freiburg, Freiburg (Germany)	C2.4	14:30	3D Thermography for the Measurement of Surface Heat Dissipation R. Schmall, S. Schramm, T. Breitenstein, A. Kroll, University of Kassel, Kassel (Germany)	D2.4	14:30	Evaluation of Precision of Measurement Results in Medical Laboratory A. Tumilovich, A. Chuvovkina, D.I. Mendeleyev Institute for Metrology, St. Petersburg (Russia), T. Martynova, Academician I.P. Pavlov First St. Petersburg State Medical University, St. Petersburg (Russia)
	14:50	<i>Break</i>									

Day 2: **Tuesday, 4 May 2021**

Session A3 Load and Force Measurement			Session B3 Gas Sensors III			Session C3 IRS* Satellite Conference: Spectroscopy, Thermometry			Session D3 Measurement Foundations II		
Chair: E. Starke, SICK Engineering GmbH, Ottendorf-Okrilla (Germany)			Chair: A. Lieberzeit, University of Vienna, Vienna (Austria)			Chair: V. Schauer, HENSOLDT Optronics GmbH, Oberkochen (Germany)			Chair: R. Morawski, Warsaw University of Technology, Warsaw (Poland)		
A3.1	15:20	Adjustment Concept for Compensating Stiffness and Tilt Sensitivity of a Novel Monolithic EMFC Weighing Cell M. Pabst, T. Fröhlich, M. Darnieder, R. Theska, Technische Universität Ilmenau, Ilmenau (Germany)	B3.1	15:20	Planar Bragg Grating Sensors Functionalized with Cyclodextrins for Trichlorofluoromethane Sensing S. Belle, S. Kefer, R. Hellmann, Aschaffenburg University of Applied Sciences, Aschaffenburg (Germany), S. Waldvogel, Johannes Gutenberg University Mainz, Mainz (Germany)	C3.1	15:20	Mid-infrared Dual-comb Spectroscopy as Sensor: Fast and Precise Quantification of Multiple Gases L. Nitzsche, J. Goldschmidt, J. Kießling, S. Wolf, F. Kühnemann, Fraunhofer Institute IPM, Freiburg (Germany), J. Wöllenstein, University of Freiburg, Freiburg (Germany)	D3.1	15:20	IoT-middleware Requirements for Context-sensitive Processing of Data to Enable Predictive Maintenance through Augmented Reality M. Jensen, University of Applied Sciences, Stuttgart (Germany)
A3.2	15:40	Model Based Evaluation of Integrated DLC Based Sensor System for Load Measurement on Linear Guides D. Krampert, S. Unsleber, Bosch Rexroth AG, Schweinfurt (Germany), L. Reindl, Albert-Ludwigs-University Freiburg, Freiburg (Germany)	B3.2	15:40	Compensating the Quantitative Signal of Metal Oxide Semiconductor Gas Sensors in Temperature Cycled Operation under the Influence of Siloxane Poisoning C. Schultealbert, T. Baur, T. Sauerwald, Andreas Schütze, Saarland University, Saarbrücken (Germany)	C3.2	15:40	Detection of Stable Isotopes of CO2 using Quantum Cascade Laser based Absorption Spectroscopy P. Nitzsche, C. Dinc, J. Wöllenstein, University of Freiburg, Freiburg (Germany), Katrin Schmitt, Fraunhofer Institute IPM, Freiburg (Germany)	D3.2	15:40	Simultaneous Signal Acquisition by Synchronous Detection of Orthogonal Frequency Components M. Baer, B. Schmauss, Erlangen Graduate School for Advanced Optical Technologies, Erlangen (Germany), P. Demosthenous, Cyprus Research & Innovation Center Ltd., Nicosia (Cyprus)
A3.3	16:00	Development of a Traceable Cantilever Calibration Device O. Dannberg, T. Fröhlich, Technische Universität Ilmenau, Ilmenau (Germany), M. Kühnel, SIOS Meßtechnik GmbH, Ilmenau (Germany),	B3.3	16:00	Monitoring Food Aging in a Refrigerator with GC/MS and Gas Sensor Systems J. Joppich, M. S. Marschibois, T. Baur, O. Brieger, C. Schultealbert, A. Schütze, Saarland University, Saarbrücken, (Germany), M. Leidinger, T. Conrad, 3S GmbH, Saarbrücken (Germany)	C3.3	16:00	Single Photon LIDAR Technology for Gas Imaging P. Drogemoeller, AMETEK Land, Dronfield (Great Britain), M Reed, QLM Technology Ltd., Bristol (Great Britain)	D3.3	16:00	Approximate Sequential Bayesian Filtering to Estimate Rn-222 Emanation from Ra-226 Sources from Spectra F. Mertes, S. Röttger, A. Röttger, Physikalisch-Technische Bundesanstalt, Braunschweig (Germany)
A3.4	16:20	A Control Concept of a Compensation Load Cell in Terms of Calibration a Cantilever V. Cherkasova, O. Dannberg, T. Fröhlich, Technische Universität Ilmenau, Ilmenau (Germany)	B3.4	16:20	Impact of cobalt oxide morphology on the thermal response to methane examined by thermal analysis O. Yurchenko, H. Pernau, L. Engel, B. Bierer, M. Jägle, Fraunhofer Institute IPM, Freiburg (Germany), J. Wöllenstein, University of Freiburg, Freiburg (Germany)	C3.4	16:20	Measurement and Calculation of Surface Temperature on Tyre Samples F. Bartz, Dr. Ing. h.c. F. Porsche AG, Weissach (Germany), S. Gehrmann, S. Augustin, V. Ackermann, T. Fröhlich, TU Ilmenau, Ilmenau (Germany)	D3.4	16:20	The Analysis and Correction of Transfer Function of Film Measuring Transducers of the Microwave Power P. Neyezhnikov, National Scientific Centre "Institute of Metrology", Kharkiv (Ukraine), I. Zakharov, Kharkiv National University of Radioelectronics, Kharkiv (Ukraine)
									D3.5	16:40	Development of a Low-Cost Sensing Node with Active Ventilation Fan for Air Pollution Monitoring N. Winkler, P. Neumann, H. Kohlhoff, J. Erdmann, Bundesanstalt für Materialforschung und -prüfung, Berlin (Germany), E. Schaffernicht, A. Lilienthal, Örebro University, Örebro (Sweden)
	17:00	Science Slam									
	17:30	End									

Conference Program

(as at 28 April 2021)

Day 3: Wednesday, 5 May 2021

Session A5 MEMS Sensors		Session B5 Chemosensor Applications		Session C5 Process Monitoring		Session D5 Deep Learning and Artificial Intelligence in Measurement	
Chair: R. Kirchner, Technische Universität Dresden, Dresden (Germany)		Chair: S. Zimmermann, Leibniz University of Hannover, Hannover (Germany)		Chair: B. Jakoby, Johannes-Kepler-Universität Linz, Linz (Austria)		Chair: E. Ruckert, Montanuniversität Leoben, Leoben (Austria)	
A5.1	13:00	B5.1	13:00	C5.1	13:00	D5.1	13:00
	Design, Simulation, Fabrication and Characterization of Piezoelectric MEMS Cantilever for Gas Density and Viscosity Sensors Applications A. Mehdaoui, C. Huber, J. Becker, F. Schraner, TrueDyne Sensors AG, Reinach (Switzerland), L.G Villanueva, Ecole Polytechnique Fédérale de Lausanne, Lausanne (Switzerland)		Determination of the Dielectric Properties of Ceria and Soot Powders by the Microwave Cavity Perturbation Method S. Walter, C. Steiner, G. Hagen, R. Moos, University of Bayreuth, Bayreuth (Germany)		Inline Inspection of Ceramic Tape Casting Processes by Means of Optical, Eddy Current and Machine Learning Methods T. Härtling, Technische Universität Dresden, Dresden (Germany), M. Heymann, S. Münch, M. Schutze, V. Gupta, C. Schuster, Fraunhofer Institute IKTS, Dresden (Germany), B. Capraro, D. Schabbel, A. Vogel, Fraunhofer Institute IKTS, Hermsdorf (Germany)		Image-Based Predictive Maintenance Concept for Inkjet Printing of Ceramic Inks P. Bischoff, C. Zeh, C. Schuster, T. Härtling, Fraunhofer Institute IKTS, Dresden (Germany), C. Kroh, Senodis Technologies GmbH, Dresden (Germany)
A5.2	13:20	B5.2	13:20	C5.2	13:20	D5.2	13:20
	Swarm-Based Multi-Objective Design Optimization of Single-Plate Condenser MEMS Microphone Q. Zaman, S. Alraho, A. König, TU Kaiserslautern, Kaiserslautern (Germany)		Simultaneous Quality and Flow Rate Monitoring of Diesel Exhaust Fluid by Using A Platinum Thin Film Sensor R. Bernhardsgrütter, C. Hepp, Innovative Sensor Technology IST AG, Ebnat-Kappel (Switzerland), J. Wollenstein, University of Freiburg, Freiburg (Germany), K. Schmitt, Fraunhofer Institute for Physical Measurement Techniques IPM, Freiburg (Germany)		Indirect Geometry Measurement for Laser Chemical Machining Using a Model-based Signal Processing Approach M. Mikulewitsch, D. Stöbener, A. Fischer, University of Bremen, Bremen (Germany)		Use of Adaptive Learning Algorithms in Linear Position Measurement Applications A. Voss, A. Bartos, TE Connectivity Sensors Germany GmbH, Dortmund (Germany)
A5.3	13:40	B5.3	13:40	C5.3	13:40	D5.3	13:40
	Designing Low Power Systems with Digital MEMS Sensors P. Stukjunger, STMicroelectronics, Prague (Czech Republic)		Examination of New Catalysts for Catalytic Combustible Gas Sensors by Thermal Analysis O. Yurchenko, H. Pernau, L. Engel, B. Bierer, M. Jägler, Fraunhofer Institute for Physical Measurement Techniques IPM, Freiburg (Germany), J. Wollenstein, University of Freiburg, Freiburg (Germany)		Process Monitoring by Impedance Spectroscopy in the Field of Used-sand Regeneration L. Bifano, A. Fischerauer, G. Fischerauer, Universität Bayreuth, Bayreuth (Germany), M. Weider, TU Bergakademie Freiberg, Freiberg (Germany)		Known Operator Learning: Hybrid Approaches and Grey Box Models A. Maier, C. Syben, R. Schielein, D. Pfeufer, Friedrich-Alexander Universität Erlangen-Nürnberg, Erlangen (Germany)
A5.4	14:00	B5.4	14:00	C5.4	14:00	D5.4	14:00
	Self-excited Contact Resonance Operation of a Tactile Piezoresistive Cantilever Microprobe with Diamond Tip M. Fahrbach, E. Peiner, Technische Universität Braunschweig, Braunschweig (Germany), M. Xu, U. Brand, Physikalisch-Technische Bundesanstalt, Braunschweig (Germany)				Online Washing Process Monitoring with Wireless Textile Impedance Measurement A. Hennig, F. Essingholt, L. Krupp, A. Grabmaier, Fraunhofer Institute IMS, Duisburg (Germany), H. Prinz, H. Hloch, J. Bohnen, wfk - Cleaning Technology Institute e.V., Krefeld (Germany), M. Roth, Textilforschungsinstitut Thüringen-Vogtland e.V., Greiz (Germany)		Beyond Explaining: Explainable AI for Model Improvement S. Lopuschkin, Frauhofe-HHI, Berlin (Germany)+C99
	14:20	Break					

Day 3: Wednesday, 5 May 2021

Session A7 Packaging and Integration of Sensors			Session B7 Sensor Materials II			Session C7 Testing and Inspection		
Chair: R. Moos, Universität Bayreuth, Bayreuth (Germany)			Chair: U. Schmid, Technical University Vienna, Vienna (Austria)			Chair: C. Tiebe, BAM Bundesanstalt für Materialforschung und -prüfung, Berlin (Germany)		
A7.1	16:40	Smart Sensor Systems for Extremely Harsh Environments H. Kappert, Fraunhofer Institute IMS, Duisburg (Germany), S. Schopferer, Fraunhofer Institute EMI, Freiburg (Germany), R. Döring, Fraunhofer Institute ENAS, Chemnitz (Germany), S. Ziesche, Fraunhofer Institute IKTS, Dresden (Germany), A. Olowinsky, Fraunhofer Institute ILT, Aachen (Germany), F. Naumann, Fraunhofer Institute IMWS, Halle (Germany), M. Jäggle, Fraunhofer Institute IPM, Freiburg (Germany), A. Ostmann, Fraunhofer Institute IZM, Berlin (Germany)	B7.1	16:40	Highly Stable Pressure Sensors made of <110> Silicon T. Frank, R. Röder, S. Jagomast, H. Übensee, A. Cyriax, T. Ortlepp, Forschungsinstitut für Mikrosensorik GmbH, Erfurt (Germany)	C7.1	16:40	Current Measurement System for Solder Joint Quality Analysis in Photovoltaic Modules M. Lenzhofer, L. Neumaier, P. Malago, J. Kosel, M. Ortner, Silicon Austria Labs SAL GmbH, Villach (Austria)
A7.2	17:00	Evaluation of High Temperature Ceramic Sensor Packages P. Gierth, L. Rebenklau, H. Barth, Fraunhofer Institute IKTS, Dresden (Germany)	B7.2	17:00	Influence of the Gas Velocity on the Temperature Homogeneity of Transducers for Gas Sensors J. Herrmann, T. Kern, G. Hagen, R. Moos, University of Bayreuth, Bayreuth (Germany)	C7.2	17:00	Testing of High-Power Traction Batteries J. Büdel, J. Teigelkötter, A. Stock, K. Kuhlmann, Technische Hochschule Aschaffenburg, Aschaffenburg (Germany), K. Lang, P. Ott, Hottinger Brüel & Kjaer GmbH, Darmstadt (Germany)
A7.3	17:20	pH Measurement System-on-Foil Aided with a Mixed Signal Processor M. Fahem, M. Steinmald, K. Neumeier, I. Eisele, Fraunhofer Institute EMFT, München (Germany), E. Korek, R. Brederlow, TU München, München (Germany)	B7.3	17:20	Influences of the Microstructure on the Drift Velocity of Electromigrating Aluminum through Molybdenum Disilicide Thin Films M. Schädel, J. Baldauf, CIS Forschungsinstitut für Mikrosensorik GmbH, Erfurt (Germany)	C7.3	17:20	Quantitative Evaluation of Artefact Reduction by an Optimized Specimen Orientation for Metrology Based on Industrial Computed Tomography M. Kaufmann, I. Effenberger, Fraunhofer Institute IPA, Stuttgart (Germany)
A7.4	17:40	Miniaturization of Mobile GPR Antenna Assembly D. Shi, T. Aftab, G. Gidion, L. Reindl, University of Freiburg, Freiburg (Germany), A. Zaragoza, Polytechnic University of Catalonia, Barcelona (Spain)	B7.4	17:40		C7.4	17:40	Application of Laser Line Scanners for Quality Control during Selective Laser Melting (SLM) K. Wehner, S. Schäfer, J. Schmitt, A. Schiffler, University of Applied Sciences Würzburg-Schweinfurt, Schweinfurt (Germany)
	18:00	End						

Conference Program

(as at 28 April 2021)

Day 4: Thursday, 6 May 2021

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Plenary Talks	
Chair:	K. D. Sommer, Technische Universität Ilmenau, Ilmenau (Germany)
08:45	Greeting NCSLI
	C. Gulka, NCSLI, Boulder (USA)
09:00	Plenary Talk 7:
	Quantum-Based Photonic Sensors for Pressure, Vacuum, and Temperature Measurements: A Vision of the Future with NIST on a Chip J. Hendricks, NIST – National Institute of Standards and Technology, Gaithersburg (USA)
09:45	Plenary Talk 8:
	High Throughput Development of Structural Materials Using Descriptors L. Mädler, IWT - Leibniz-Institute for Materials Engineering and University of Bremen (Germany)
10:30	Plenary Talk 9:
	Quantum Sensing with Spins in Diamond P. Maletinsky, Basel University, Basel (Switzerland)
11:15	Break

Session A8 Ultrasonic Transducers and Measurement		Session B8 Fiber Optic Sensors		Session C8 Testing and Diagnosis		Session D8 Applications I	
Chair: S. Rupitsch, Albert-Ludwigs-University Freiburg, Freiburg (Germany)		Chair: A. Fischer, University of Bremen (Germany)		Chair: T. Hartling, Fraunhofer-Institut für Keramische Technologien und Systeme IKTS, Dresden (Germany)		Chair: R. Tutsch, Technische Universität Braunschweig, Braunschweig (Germany)	
A8.1	11:30	B8.1	11:30	C8.1	11:30	D8.1	11:30
Electrostatic Transducer for Ultrasound Ranging Based on In-Plane Electrode Motion J. Monsalve, F. Wall, M. Jongmanns, S. Langa, M. Kircher, B. Kaiser, A. Melnikov, I. Marica-Bercu, Fraunhofer Institute IPMS, Dresden (Germany), H. Schenk, Arioso Systems GmbH, Dresden (Germany)		Improvements in Thermal Profiling Using High-Definition Fiber Optic Sensing D. Potter, A. Rahim, Luna Innovations, Blacksburg (USA), A. Stern, Luna Innovations, Pfullingen (Germany)		Methodology for Diagnosing Sensor Faults on Engine Test Benches M. Wohltan, G. Pirker, LEC GmbH, Graz (Austria), A. Wimmer, Graz University of Technology, Graz (Austria)		Investigation of a Mitigation Strategy for Thermal Effects of X-ray Sources in Computed Tomography F. Binder, B. Baumgartner, T. Hausotte, Friedrich-Alexander-University Erlangen-Nuremberg, Erlangen (Germany)	
A8.2	11:50	B8.2	11:50	C8.2	11:50	D8.2	11:50
Measurement and Simulation of Lamb Waves in Adhesive-bonded Multilayer Systems H. Zeipert, L. Claes, S. Johannesmann, M. Webersen, B. Henning, Paderborn University, Paderborn (Germany), Y. Lugovtsova, J. Prager, Bundesanstalt für Materialforschung und -prüfung, Berlin (Germany)		Tunable Nanopillars as Surface Enhanced Raman Scattering (SERS) Active Structure for Optical Quartz Glass Fiber E. Melekhov, V. Abb, T. Weidauer, M. Kammler, A. Lechner, Regensburg University of Applied Sciences, Regensburg (Germany)		Near Process Coolant Flow Field Measurements in a Grinding Machine C. Vanselow, B. Espenhahn, D. Stöbener, A. Fischer, University of Bremen, Bremen (Germany), L. Schumski, D. Meyer, Leibniz-Institut für Werkstofforientierte Technologien, Bremen (Germany)		Influence of Continuous Scan Mode and Workpiece Positioning on Dimensional Measurements with Computed Tomography C. Orgeldinger, F. Wohlgenuth, T. Hausotte, Friedrich-Alexander-University Erlangen-Nuremberg, Erlangen (Germany)	
A8.3	12:10	B8.3	12:10	C8.3	12:10	D8.3	12:10
A Hardware Simulator for the Generation of Ultrasonic Transmission Test Signals J. Förster, M. Gevers, KROHNE Innovation GmbH, Duisburg (Germany), M. Vogt, KROHNE Messtechnik GmbH, Duisburg (Germany), KROHNE New Technologies BV, Dordrecht (The Netherlands)		Influence of Temperature on Distributed Strain Sensing with OTDR in Polymer Optical Fibers S. Dengler, N. Schmidt, M. Luber, J. Fischer, O. Ziemann, R. Engelbrecht, Technische Hochschule Nürnberg Georg Simon Ohm, Nuremberg (Germany), H. Hangen, HUESKER Synthetic GmbH, Gescher (Germany)		Wireless Measurement of Moisture Entry in SYLGARD-527 K. Dehning, M. Hitzemann, S. Zimmermann, Leibniz University Hannover, Hannover (Germany)		Accuracy Improvement of the Alternating Current Zero Potential Method for Impedimetric Sensor Matrices Z. Hu, D. Chen, O. Kanoun, Technische Universität Chemnitz, Chemnitz (Germany)	
A8.4	12:30	B8.4	12:30	C8.4	12:30	D8.4	12:30
Acoustophoresis in Suspensions with Local- and Time-discrete Sound Fields Based on the Time Reversal Technique P. Hörnlein, S. Wöckel, H. Arndt, ifak - Institute for Automation and Communication e. V., Magdeburg (Germany), J. Auge, University of Applied Sciences Magdeburg-Stendal, Magdeburg (Germany)		12 nm Spectral Shift with a VCSEL in the Near Infrared in a 10 µs Time Interval R. Engelbrecht, G. Saur, R. Kruglov, Technische Hochschule Nürnberg Georg Simon Ohm, Nuremberg (Germany)		Measurement Methods for Understanding Water Uptake Processes in Polymers P. Gierth, U. Gierth, L. Rebenkiau, M. Schneider, Fraunhofer IKTS, Dresden (Germany)		Precision Measurement of the Application-dependent Current Consumption of a Wireless Transceiver Chip T. Doebbert, C. Cammin, G. Scholl, Helmut-Schmidt-University, Hamburg (Germany)	
	12:50	Break					

Conference Program

(as at 28 April 2021)

Day 4: Thursday, 6 May 2021

Session A10 Inverse Problems in Measurements (Special Session)		Session B10 Optical Sensors and Measurement		Session C10 Magnetic Sensors		Session D10 Advances in Sensor Electronics	
Chair: B. Henning, Paderborn University, Paderborn (Germany)		Chair: R. Engelbrecht, Technische Hochschule Nürnberg, Nürnberg (Germany)		Chair: R. Slatter, Sensitec GmbH, Wetzlar (Germany)		Chair: A. König, Technical University of Kaiserslautern, Kaiserslautern (Germany)	
A10.1	15:20	B10.1	15:20	C10.1	15:20	D10.1	15:20
Optimised Multi-Electrode Topology for Piezoelectric Material Characterisation L. Claes, N. Feldmann, B. Henning, Paderborn University, Paderborn (Germany), B. Jurgelucks, V. Schulze, S. Schmidt, A. Walther, Humboldt-Universität zu Berlin, Berlin (Germany)		A 64 x 48 BSI SPAD Sensor Based on 8" Wafer 3D Stacking Technology S. Grosse, A. Steuer, P. vom Stein, C. Zeidler, J. Haase, Fraunhofer IMS, Duisburg (Germany)		Integrated Differential Transformer on a Single Printed Circuit Board M. Berger, A. Zygmanski, S. Zimmermann, Leibniz University Hannover, Hannover (Germany)		Poly-harmonic Signal Characterization Method and ADC Characterization Using Josephson Converter and Linear Regression Analysis S. Sherstobitov, M. Karpova, All-Russian Scientific Research Institute of Physicotechnical and Radio Engineering Measurements, Moscow (Russia)	
A10.2	15:40	B10.2	15:40	C10.2	15:40	D10.2	15:40
Inverse Determination of Elastic Material Parameters from Ultrasonic Guided Waves Dispersion Measurements using Convolutional Neuronal Networks M. Held, A. Rashwan, M. Lauschkin, J. Bulling, Y. Lugovtsova, J. Prager, Bundesanstalt für Materialforschung und -prüfung, Berlin (Germany)		A Novel Approach to Identify Wood Species Optically Using Fluorescence Lifetime Imaging Microscopy N. Leiter, M. Wohlschläger, V. Auer, M. Versen, Technical University of Applied Sciences Rosenheim, Rosenheim (Germany), C. Laforch, University Bayreuth, Bayreuth (Germany)		Rotary Encoder Magnet Inspection with Noise Elimination K. Vervaeke, Magcam NV, Leuven (Belgium)		Feasibility Study for Safe Workplaces through Automation and Digitalization Technology with Redesigned Smart Sensors and LoRa WAN Monitoring System S. Johann, C. Tiebe, H. Kohlhoff, M. Bartholmai, Bundesanstalt für Materialforschung und -prüfung, Berlin (Germany)	
A10.3	16:00	B10.3	16:00	C10.3	16:00	D10.3	16:00
Model-based Optimization for Acoustic Characterization of Thin Hidden Layers S. Wöckel, H. Arndt, ifak - Institut für Automation und Kommunikation e.V., Magdeburg (Germany)		Differential Channel Optical Readout System for Color Changes of Gas Sensitive Colorimetric Dyes C. Weber, M. El-Safoury, C. Pannek, L. Engel, A. Eberhardt, M.-L. Bauersfeld, Fraunhofer Institute IPM, Freiburg (Germany), J. Wollenstein, University of Freiburg, Freiburg (Germany)		Calibration Method for an Inductive Localization System of Wireless Sensors in Photoreactors D. Demetz, A. Sutor, UMIT - Private University, Hall in Tirol (Austria)		Adaptive Spiking Sensor Electronics Inspired by Biological Nervous System Based on Memristor Emulator for Industry 4.0 Applications H. Abd, A. König, TU Kaiserslautern, Kaiserslautern (Germany)	
A10.4	16:20		16:20	C10.4	16:20	D10.4	16:20
Phononic Crystals Applied as Ultrasonic S-A74ensor for Liquid Systems R. Lucklind, N. Mukhin, U. Steinmann, Otto-von-Guericke-Universität Magdeburg, Magdeburg (Germany)				Embedded Multi-frequency Eddy Current Measurement System for in-situ Assessment of Metals R. Munjal, F. Wendler, O. Kanoun, Chemnitz University of Technology, Chemnitz (Germany)		Predicting the Analog Integrated Circuit Performance Using Indirect Measurements Based on Simulations S. Alraho, Q. Zaman, A. König, TU Kaiserslautern, Kaiserslautern (Germany)	
	16:40	<i>Break</i>					
	16:50	Fairwell reception and awards (best paper, best young paper)					
	17:30	<i>End of Conference</i>					