

Measuring By Light 2023

Tuesday 28 March 2023

Registration and coffee	10:00	10:30	Registration and coffee - foyer	
Welcome	10:30	10:45	Welcome word - auditorium	
Keynote 1 Auditorium	10:50	11:30	Phoxonic Microsystems – Wave-based sensors and Actuators <i>Xavier Rottenberg</i> IMEC, Leuven, Belgium	
Keynote 2 Auditorium	11:30	12:10	Spectral sensing at your fingertips (62) <i>Andrea Fiore</i> Eindhoven University of Technology, Eindhoven, Netherlands	
Lunch - Exhibition	12:10	13:10	Foyer	
Parallel session				
Parallel Session 1	13:10	14:10	Room 1: "Materials & Composites"	Room 2: "Microsystems & Fundamentals"
			13:10 - 13:30 Inspecting Stiffened CFRP Aerospace Panels by Scanning Laser Doppler Vibrometry (2) <i>Mathias Kersemans, Saeid Hedayatrasa, Wim Van Paepegem</i> Universiteit Gent, Gent, Belgium	13:10 - 13:30 Theoretical comparison of the signal-to-noise ratios of two types of vibrometers: Mach-Zehnder and Sagnac interferometers (28) <i>Zhizhi Yanq1,2, Emiel Dieussaert Dieussaert1,2, Roel Baets1,2, Yanlu Li1,2</i> 1 Photonics Research Group, Ghent University-Imec, Ghent, Belgium. 2 Center for Nano- and Biophotonics (NB-Photonics), Ghent University, Ghent, Belgium
			13:30 - 13:50 Identification of the orthotropic viscoelastic tensor of composites using 3D infrared scanning laser Doppler vibrometry (4) <i>Adil Han Orta1,2, Mathias Kersemans2, Koen Van Den Abeele1</i> 1KU Leuven Campus Kortrijk, Kortrijk, Belgium. 2Ghent University, Ghent, Belgium	13:30 - 13:50 InP integrated photonics for enabling FMCW LiDAR (61) <i>Victor Dolores-Calzadilla, Marco Gagino, Limeng Zhang, Shiva Vikram Bhagavatula, Kevin Williams</i> Technical University of Eindhoven, Eindhoven, Netherlands
	13:50 - 14:10 Optical instrumentation for high strain rate testing of composite materials: maximising the value of measurements (25) <i>Andrei Anisimov1, Roger Groves1, Tatjana Glaskova-Kuzmina2, Patricia Verleysen3</i> 1TU Delft, Delft, Netherlands. 2University of Latvia, Riga, Latvia. 3Ghent University, Ghent, Belgium	13:50 - 14:10 Strong linear and nonlinear displacement measurements in nanophotonic optomechanical resonators (49) <i>Pascal Neveu, Roel Burqwal, Ewold Verhagen</i> AMOLF, Amsterdam, Netherlands		
	13:10	14:10	Room 3: "Medical & Bio 1"	Room 4: " Optical Fiber Sensing"
			13:10 - 13:30 Graphene drums to hear the beat of bacteria (17) <i>Irek Roslon1, Aleksandre Japaridze1, Peter Steeneken2, Cees Dekker2, Farbod Alijani2</i> 1 SoundCell, Delft, Netherlands. 2 TU Delft, Delft, Netherlands	13:10 - 13:30 Smart railway traffic monitoring using FBG sensors (59) <i>Christophe Caucheteur</i> Université de Mons, Mons, Belgium. B-SENS, Mons, Belgium
			13:30 - 13:50 Reading sound pressure waves in the hearing organ with fiber-optic sensing.(43) <i>Irina Wils1, Tristan Putzeys1, Guy Fierens2,1, Alexander Geerardyn1,3, Kathleen Denis1, Nicolas Verhaert1,3</i> 1KU Leuven, Leuven, Belgium. 2Cochlear, Mechelen, Belgium. 3UZ Leuven, Leuven, Belgium	13:30 - 13:50. Simulations for nanoparticle-doped optical fibre used for small strain monitoring under different signal to noise ratios (33) <i>Xiang Wang, Rinze Benedictus, Roger Groves</i> TU Delft, Delft, Netherlands
	13:50 - 14:10 Digital image correlation (DIC) applied to the human eardrum: challenges, strengths, and insights in the mechanics of hearing (46) <i>Pieter Livens, Joris Dirckx</i> University of Antwerp, Antwerp, Belgium	13:50 - 14:10 Dynamic Sensing of Large Arrays of Draw Tower Gratings using Code Division Multiplexing (53) <i>Jan Van Roosbroeck1, Marek Goetten2, Johan Vlekken1, Bram Van Hoe1, Eric Lindner3, Steffen Lochmann2</i> 1FBGS International, Geel, Belgium. 2Hochschule Wismar, Wismar, Germany. 3FBGS Technologies, Jena, Germany		
	Coffee break	14:10	14:40	Foyer

Parallel session				
Parallel Session 2	14:40	16:00	Room 1: "Materials & Degradation"	Room 2: "Microscopy"
			14:40 - 15:00 3D Infrared Scanning Laser Doppler Vibrometry for Measuring Wave Dynamics in Acoustic Metamaterials (5) <u>Saeid Hedayatrasa</u> , Mathias Kersemans Ghent University, Zwijnaarde, Belgium	14:40 - 15:00 Computational Microscopy for Breaking Fundamental Imaging Barriers (11) <u>Sjoerd Stallinga</u> TU Delft, Delft, Netherlands
			15:00 - 15:20 Assessing the dynamics of quasiperiodic beams and plates using scanning laser vibrometry (55) <u>Bart Van Damme</u> , Andrea Bergamini, Domenico Tallarico Empa, Materials Science and Technology, Dübendorf, Switzerland	15:00 - 15:20 Cryo-4Pi single molecule localization microscopy: A 3D sub-nm imaging technique (20) <u>Qingru Li</u> , Sjoerd Stallinga, Bernd Rieger Delft University of Technology, Delft, Netherlands
			15:20 - 15:40 Optical strain measurement techniques for Very High Cycle Fatigue (VHCF) testing (48) <u>Jörg Sauer</u> ¹ , Kilian Shambaugh ² , Arend von der Lieth ³ , Vikrant Palan ² 1Polytec GmbH, Waldbronn, Germany. 2Polytec Inc., Irvine, USA. 3Polytec Inc., Irvine, USA	15:20 - 15:40 2D material photonic nanostructures for single-molecule fingerprinting (32) <u>Sabina Caneva</u> , Dong Hoon Shin, Xiliang Yang, Sung Hyun Kim, Chirlmin Joo TU Delft, Delft, Netherlands
	15:40 - 16:00 Multi-resolution laser-based damage detection in thin-walled structures using ultrasound (47) Jakub Spytek, Jakub Mrówka, Łukasz Ambroziński, <u>Łukasz Pieczonka</u> AGH University of Science and Technology, Krakow, Poland	15:40 - 16:00 Photoacoustic detection of buried gratings Thomas van den Hooven, Stephen Edward, Guido de Haan, Vanessa Verrina, <u>Paul Planken</u> 1 ARCNL, Amsterdam, Netherlands 2 University of Amsterdam, Amsterdam, Netherlands		
	14:40	16:00	Room 3: "Medical & bio 2"	Room 4: "Waves and flow"
			14:40 - 15:00 Development of multi-beam laser Doppler vibrometer for cardiovascular disease monitoring and diagnosis (27) <u>Yanlu Li</u> ¹ , Soren Aasmul ² , Roel Baets ¹ 1Ghent University - imec, Ghent, Belgium. 2Medtronic Bakken Research Center, Maastricht, Netherlands	14:40 - 15:00 Exploiting high frequency waves for SHM using 3D SLDV system: what can we learn more? <u>Natalia Ribeiro Marinho</u> , Dario Di Maio, Richard Loendersloot University of Twente, Enschede, Netherlands
			15:00 - 15:20 Non-destructive intracochlear Vibrometry via Optical Coherence Tomography (38) <u>Tristan Putzeys</u> ¹ , Lore Kerkhofs ¹ , Anastasiya Starovoyt ¹ , Nicolas Verhaert ^{1,2} 1KU Leuven, Leuven, Belgium. 2UZ Leuven, Leuven, Belgium	15:00 - 15:20 High dynamic range flow speed imaging with optical coherence tomography (10) <u>Jeroen Kalkman</u> , Konstantine Cheishvili TU Delft, Delft, Netherlands
15:20 - 15:40 Voltage Imaging with Genetically Encoded Voltage Indicators: development and applications (63) <u>Daan Brinks</u> Delft University of Technology, Delft, Netherlands			15:20 - 15:40 Novel high-bandwidth laser-Doppler vibrometry-based setup with microfabricated cantilevers to measure the impact force of microfluidic-jets. (24) <u>Diana L. van der Ven</u> ¹ , Remco G.P. Sanders ¹ , Dennis Alveringh ² , David Fernandez Rivas ¹ 1University of Twente, Mesoscale Chemical Systems, Enschede, Netherlands. 2University of Twente, Integrated Devices and Systems, Enschede, Netherlands	
15:40 - 16:00 tba <u>Carlas Smith</u> TU Delft, Delft, Netherlands	15:40 - 16:00 Deep learning aided laser Doppler vibrometry for delamination identification in composite laminates (65) <u>Pawel Kudela</u> , Abdalraheem Ijeh Institute of Fluid Flow Machinery, Polish Academy of Sciences, Gdansk, Poland			
Delft City Tour	16:00	17:10	Guided walk from TU Delft aula congress building to Museum Prinsenhof (dinner)	
Network event & Conference dinner				
Vermeer Exposition & Museum	17:00	18:30	Museum Prinsenhof	
Conference dinner	19:00	22:00		
Reception	22:00	23:45		

Measuring By Light 2023

Wednesday 29th March 2023

Registration and coffee	9:30	9:50	Registration and coffee - foyer	
Keynote 3 Auditorium	9:50	10:30	Optical Tools for Assessing the Structural Integrity of Aerospace Structures (58) <i>Roger Groves</i> Delft University of Technology, Delft, Netherlands	
Coffee break	10:30	11:00	Foyer	
Parallel session				
Parallel Session 3	11:00	12:20	Room 1: "Automotive, Mobility and robotics"	Room 2: "Nano particles and Measurement Instruments"
			11:00 -11:20 Tactile sensing via color mixing for robotic grasp (14) <i>Michael Wiertlewski</i> TU Delft, Delft, Netherlands	11:00 -11:20 Measurement of the Refractive Index of Particle Suspensions Using Spectral Interferometry (22) <i>Peter Speets, Jeroen Kalkman</i> TU Delft, Delft, Netherlands
			11:20 - 11:40 Experimental modal analysis of a composite B-Pillar car component measured with optical techniques (42) <i>Eduardo Marques1,2, Davide Mastrodicasa1,3, André Tavares1,4, Emilio Di Lorenzo1, Anna Matveeva1, Nuno Silvestre2</i> 1Siemens Industry Software NV, Leuven, Belgium. 2Department of Mechanical Engineering, University of Lisbon, Lisbon, Portugal. 3Department of Mechanical Engineering, Vrije Universiteit Brussel, Brussels, Belgium. 4Department of Mechanical Engineering, KU Leuven, Leuven, Belgium"	11:20 - 11:40 Refractive index determination of liquids with the lowest uncertainty to improve standardization of flow cytometry for (bio)nanoparticles. (52) <i>Walter Knulst, Martine Kuiper, Richard Koops</i> VSL National Metrology Institute, Delft, Netherlands
			11:40 - 12:00 Use of a scanning laser Doppler vibrometer to investigate causes and possible mitigations of bicycle disc brake noise (36) <i>Ajaypal Singh1, Hans Vreman2, Andrew Dressel1, Jason Moore1</i> 1TU Delft, Delft, Netherlands. 2Gazelle, Dieren, Netherlands	11:40 - 12:00. Improving the determination of strain in the deformed Silicon measured by Raman spectroscopy (40) <i>Laurent Francis1, Nicolas Roisin1, Marie-Stéphane Colla2, Denis Flandre1, Jean-Pierre Raskin1</i> 1ICTEAM, UCLouvain, Louvain-la-Neuve, Belgium. 2IMMC, UCLouvain, Louvain-la-Neuve, Belgium
			12u00 - 12u20 Flash FMCW LiDAR from vibrometry to automotive (56) <i>Gregory Pandraud1, Eduardo Margallo2, Jose Luis Rubio2</i> 1Ommatidia Nederland, Rijswijk, Netherlands. 2Ommatidia LiDAR, Madrid, Spain	12:00 - 12:20 Bioimaging - Use Cases from Custom Microscopy and Spectrometry Systems <i>Olivier Fontaine</i> Lambda-X, Nivelles, Belgium
	11:00	12:20	Room 3: "Microsystems"	Room 4: "High performance Sensors 1"
			11:00 -11:20 GHz MEMS Testing: Challenges and Techniques for Evaluating High-Frequency Performance (64) <i>Markus Heilig</i> Polytec GmbH, Waldbronn, Germany	11:00 -11:20: A Post-processing Methodology for Reducing Speckle Noise in Laser Doppler Vibrometer Measurements (6) <i>Yuanchen Zeng, Alfredo Núñez, Zili Li</i> Delft University of Technology, Delft, Netherlands
			11:20 - 11:40. Spiderweb nanomechanical resonators: ultrahigh-Q designs inspired by nature and guided by machine learning (30) <i>Richard Norte1, Dongil Shin1, Andrea Cupertino1, Matthijs H. J. de Jong1, Peter G. Steeneken1, Miguel Bessa2,1</i> 1Delft University of Technology, Delft, Netherlands. 2Brown University, Providence, USA	14:10 - 14:30 Strain-based bearing diagnostics via Fiber Bragg Grating (FBG) sensors (70) <i>Alexandre Mauricio a, b, Sidney Goossensc, Panagiotis Mantas a, b, Francis Berghmans c, Konstantinos Gryllias a, b</i> aLMSD Division Mecha(tro)nic System Dynamics, Department of Mechanical Engineering, KU Leuven, Celestijnenlaan 300, Box 2420, 3001 Leuven, Belgium bFlanders Make@KU Leuven, Belgium cVrije Universiteit Brussel, Brussels Photonics (B-PHOT) and Flanders Make, Pleinlaan 2, 1050 Brussels, Belgium
			11:40 - 12:00. Laser Doppler vibrometry as a versatile tool for piezoelectric micromachined ultrasound transducer characterization and development (31) <i>Pieter Gijsenbergh, Robert Ukropec, Samer Houry, Dominika Wysocka, Jeremy Segers, John Viaene, Epimitheas Georgitzikis, David Cheyns, Veronique Rochus</i> IMEC, Leuven, Belgium	11:40 - 12:00 Fitting field-dependent aberrations with a vectorial PSF model using Nodal Aberration Theory (21) <i>Isabel Droste, Sjoerd Stallinga, Bernd Rieger</i> Delft University of Technology, Delft, Netherlands
			12:00-12:20 Design of Multiwavelength Waveguide Hologram Coupler for Free-Space Beam Projection from SiN Photonic Integrated Circuits (16) <i>David De Vocht, Yuqing Jiao, E.A.M. Bente</i> Eindhoven University of Technology, Eindhoven, Netherlands	12:00 - 12:20 Distance metrology with pulsed lasers (51) <i>Nandini Bhattacharya</i> Delft University of Technology, Delft, Netherlands
Lunch - exhibition	12:20	13:30	Foyer	

<p>Keynote 4 Auditorium</p>	<p>13:30</p>	<p>14:10</p>	<p>Reaching and exceeding the shot noise limit with laser Doppler vibrometers (35) <u>Christian Rembe</u> Institute of Electrical Information Technology, Clausthal University of Technology, Clausthal-Zellerfeld, Germany</p>
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Parallel session

<p>Parallel Session 4</p>	<p>14:10</p>	<p>15:30</p>	<p>Room 1: "Model and analysis methods"</p>	<p>Room 2: "Energy and earth science"</p>
			<p>14:10 - 14:30 Hybrid modeling by using laser vibration measurement results implemented in FEM (8) <u>Michal Kozupa</u>, Akshaya Kulkarni, Grzegorz Kmita Hitachi Energy Research, Krakow, Poland</p>	<p>14:10 - 14:30 Ultrasonic imaging of geological analogue scale models (15) <u>Jasper Smits</u>, Fred Beekman, Ivan Vasconcelos, Ernst Willingshofer, Liviu Matenco Utrecht University, Utrecht, Netherlands</p>
			<p>14:30 - 14:50. Comparison of pseudo-random excitation and impulse excitation in modal analysis using randomly triggered cameras (37) <u>Yonggang Wang</u>^{1,2}, Thijs Willems^{1,2}, Frank Naets^{1,2}, Matteo Kirchner^{1,2} 1KU Leuven, Department of Mechanical Engineering, Celestijnenlaan 300, B-3001, Leuven, Belgium. 2DMMS core lab, Flanders Make, Leuven, Belgium</p>	<p>14:30 - 14:50 High Sensitivity Partial Discharge Monitoring using Fiber Optic Sensing: experience and examples (57) <u>Meüs van der Poel</u>, Aydin Zadeh Optics11, Amsterdam, Netherlands</p>
			<p>14:50 - 15:10 Operational deflection shape extraction on a simple cantilever beam by using 3D-DIC and video motion magnification (45) <u>Davide Mastrodicasa</u>^{1,2}, Francesco Cosco³, Emilio Di Lorenzo¹ 1Siemens Industry Software NV, Leuven, Belgium. 2Vrije Universiteit Brussel, Brussels, Belgium. 3University of Calabria, Arcavacata di Rende, Italy</p>	<p>14:50 - 15:10 Towards Classification of the Near Infrared Melt Pool Signature in Directed Energy Deposition (26) <u>Charles Snyers</u>, Julien Ertveldt, Jan Helsen Vrije Universiteit Brussel, Brussels, Belgium</p>
			<p>15:10 - 15:30 A novel technique to characterize the viscoelastic properties of bituminous mortar using a scanning laser Doppler vibrometer (18) <u>Navid Hasheminejad</u>, Cedric Vuye, Steve Vanlanduit University of Antwerp, Antwerp, Belgium</p>	<p>15:10 - 15:30 Distributed fiber optic strain sensing of submarine power cable bending: the influence of temperature (68) <u>Jasper Ryvers</u>, Mia Loccufier, Wim De Waele Ghent University, Ghent, Belgium</p>
	<p>15:15</p>	<p>15:30</p>	<p>Room 3: "Aerospace and levitation"</p>	<p>Room 4: "High Performance Sensors 2"</p>
			<p>14:10 - 14:30 Mechanical pixel resonances on an X-ray TES detector developed for space instrumentation (13) <u>Henk van Weers</u> SRON, Leiden, Netherlands</p>	<p>14:10 - 14:30 The challenges and opportunities for integrated photonic sensing <u>Rolf Evenblij</u> Photonfirst, Alkmaar, Netherlands</p>
			<p>14:30 - 14:50 Laser vibrometer based reconstruction of nonlinear acoustic fields in contactless levitation (29) <u>Izhak Bucher</u>, Elad Tenenbaum Technion, Haifa, Israel</p>	<p>14:30 - 14:50 Compact optical accelerometer for low-frequency vibration sensing (39) <u>Anthony Amorosi</u>^{1,2}, Loïc Amez-Droz^{2,1}, Christophe Collette^{1,2} 1ULiège, Liège, Belgium. 2ULB, Bruxelles, Belgium</p>
			<p>14:50 - 15:10. Laser Doppler Vibrometry for advanced dynamics characterization of lightweight assembled structures (50) <u>Simone Gallas</u>, Iman Sabahi, Felipe Alves Pires, Lucas Van Belle, Claus Claeys, Elke Deckers, Frank Naets KU Leuven, Leuven, Belgium</p>	<p>14:50 - 15:10 Conoscopic interferometry for optimal acoustic pulse detection in ultrafast acoustics (41) Martin Robin¹, <u>Ruben Guis</u>¹, Mustafa Umit Arabul², Zili Zhou², Nitesh Pandey², Gerard Verbiest¹ 1Department of Precision and Microsystems Engineering, Delft University of Technology, Delft, Netherlands. 2ASML Netherlands B.V., Veldhoven, Netherlands</p>
			<p>15:10 - 15:30 Shearography – A contactless, full field and high throughput method for the inspection of aerospace composite parts : improvements and robotization (54) <u>Thibault Boulanger</u>¹, Pierre Servais², Laurent Aerts³ 1OPTRION, Liège, Belgium. 2NDTPro, Libramont, Belgium. 3CILYX, Liege, Belgium</p>	<p>15:10 - 15:30 Enhancing the measurement precision of laser-based low-loss measurements with quantum squeeze lasers (67) <u>Axel Schönbeck</u>, Jan Südbeck, Jascha Zander, Dieter Berz-Vöge, Roman Schnabel Universität Hamburg, Institut für Laserphysik, Hamburg, Germany</p>

Coffee break + Exhibition	15:30	16:00	Foyer	
Poster Presentation Reception and exhibition				
Foyer & Vides	16:00	17:30	Hydrogen gas detection by multi-reflection Raman Scattering (12) <i>Rajshree Rajkumari, Yusei Yamamoto, <u>Yoshimine Kato</u></i> <i>Kyushu university, Fukuoka, Japan</i>	Bioechanical assessment of natural and artificial cartilage by phase-sensitive spectral domain optical coherence tomography (44) <i>Maxim Vovchenko, Marnix Gielen, Zoë De Vrij, Rocío Castro Viñuelas, Seyed Ali Elahi, Ilse Jonkers, Hans Van Oosterwyck, Christ Glorieux</i> <i>KU Leuvmn, Leuven, Belgium</i>
			Towards measuring alcohol concentration with reflection on a silicon-rich silicon nitride microchannel at near infrared wavelengths (23) <i>Anneirudh <u>Sundararajan</u>, Remco Sanders, Remco Wiegerink</i> <i>University of Twente, Enschede, Netherlands</i>	Measuring 2D antiferromagnets by optothermal mechanical resonance (66) <i>Maurits Houmes¹, Gabriele Baglioni¹, Makars Siskins¹, Martin Lee¹, Dorye Esteras², Alberto Ruiz², Samuel Manas-Valero^{1,2}, Carla Boix-Constant², Jose Baldovi², Eugenio Coronado², Yaroslav Blanter¹, Peter Steeneken^{1,3}, Herre van der Zant¹</i> <i>1Kavli Institute of Nanoscience, Delft University of Technology, Delft, Netherlands.</i> <i>2Instituto de Ciencia Molecular, Universitat de Valencia, Valencia, Spain.</i> <i>3Department of Precision and Microsystems Engineering, Delft University of Technology, Delft, Netherlands</i>
Reception	17:30	19:30	Foyer & Vides	

Measuring by light 2023

Thursday 30th March 2023

Registration and coffee	9:00	9:30	Registration & coffee
Workshop Introduction	9:30	9:40	Welcome word & introduction to Industrial Sessions
Industrial Lecture 1	9:40	10:05	Basic principles and application examples of Laser Doppler Vibrometers <i>Jochen Schell</i> <i>Polytec, Waldbronn, Germany</i>
Industrial Lecture 2	10:05	10:30	Basic principles and applications of Parallel Laser RADAR to vibrometry <i>Grégory Pandraud</i> <i>Ommatidia LiDAR, Madrid, Spain</i>
Coffee break	10:30	11:00	Foyer
Industrial Lecture 3	11:00	11:20	LaVision Imaging-Based Optical Metrology for Fluid-Structure Interaction Applications <i>Alex Nila</i> <i>LaVision, Bicester, United Kingdom</i>
Industrial Lecture 4	11:20	11:40	Non-destructive testing with shearography: principles and case studies <i>Thibault Boulanger</i> <i>Optrion, Liège, Belgium</i>
Industrial Lecture 5	11:40	12:00	Spectrally Broadband Light Sources - Case Studies <i>Gerald Werner</i> <i>Fibotec, Meinigen, Germany</i>
Lunch	12:00	13:00	Foyer
Demonstrations Part 1	13:00	14:30	Workshops, Demonstrations <ol style="list-style-type: none"> 1. PSV-3D QTEC Scanning laser Doppler Vibrometer demonstration (Polytec) 2. Q1 LiDAR vibrometer demonstration (Ommatidia LiDAR) 3. An Introduction to Digital Image Correlation (LaVision) 4. DeFinder Shearography demonstration (Optrion) 5. Introduction to MSA-XU High Frequent Micro System Analyzer (Polytec)
Coffee break	14:30	15:00	
Demonstrations Part 2	15:00	16:00	

Labotour VLL labo TNO
Bart Snijders
TNO, Delft, the Netherlands