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COST Action CA16124 presents BioBrillouin2020

9 – 11 September 2020
Virtual Meeting

Local organisers: Prof Francesca Palombo, Prof Nick Stone, Prof Julian Moger



The 4th BioBrillouin conference of the COST Action CA16124 “Brillouin Light Scattering Microspectroscopy for Biological and Biomedical Research and Applications” will be a virtual meeting taking place on Wednesday 9th until Friday 11th September 2020. This BioBrillouin2020 meeting will be preceded by an online Management Committee meeting (only for BioBrillouin Management Committee members) on Thursday 3rd September. The programme for BioBrillouin2020 is outlined below (all times are BST).

Programme. Scientific meeting

Wednesday 9th September - Zoom	
13:30 – 13:40	Welcome presentation: Francesca Palombo, University of Exeter, UK Kareem Elsayad, Vienna BioCenter Core Facilities, Austria
13:40 – 14:20	Keynote Presentation: Seok-Hyun Yun, MGH and Harvard Medical School, Boston, USA <i>Bio Brillouin</i>
14:20 – 14:30	Coffee break
Session 1 – Medical and clinical applications Chair: Stephen Malin	
14:30 – 15:00	Invited: Lewis Stevens, University of Iowa, USA <i>Development of powder Brillouin light scattering</i>
15:00 – 15:20	Christina Conrad, University of Maryland, USA <i>Mechanical Modulation of Ovarian Cancer Tumor Nodules under Flow</i>
15:20 – 15:40	Maria Victoria Gómez-Gaviro, Instituto de Investigación Sanitaria Gregorio Marañón, Madrid, Spain <i>Brillouin spectroscopy as a new method to measure post-infarction myocardial stiffness</i>
15:40 – 16:00	Joshua Webb, University of Maryland, USA <i>Decoupling the corneal hydration and solid mechanical contributions of Brillouin frequency shift</i>
16:00 – 16:20	Breakout discussion: Meet the speakers
16:20 – 16:30	Coffee break

Session 2 – Phenotyping and novel life science applications Chair: Thomas Dehoux	
16:30 – 17:00	Invited: Jochen Guck, Max Planck Institute for the Science of Light, Germany <i>Optomechanical insights into the zebrafish spinal cord</i>
17:00 – 17:20	Laura Bacete, NTNU Trondheim, Norway <i>Using Brillouin Microscopy to investigate plant cell wall integrity and controlled cell wall alterations in Arabidopsis thaliana</i>
17:20 – 17:40	Timon Beck, Max Planck Institute for the Science of Light, Germany <i>Brillouin microscopy studies on phase separated FUS protein droplets</i>
17:40 – 18:00	Tim Dullweber, EMBL Heidelberg, Germany <i>Automated Brillouin microscopy of cells on micropatterns</i>
18:00 – 18:20	Claudia Testi, Istituto Italiano di Tecnologia, Italy <i>Shedding new light on biomechanics importance for microglia</i>
18:20 – 18:45	Breakout discussion: Meet the speakers

Thursday 10th September - Zoom	
Session 3 – Correlative and comparative methods Chair: Silvia Caponi	
13:30 – 14:00	Invited: Vladislav Yakovlev, Texas A&M University, USA <i>Dynamic Brillouin microscopy</i>
14:00 – 14:20	Martina Alunni Cardinali, University of Perugia, Italy <i>Understanding bone and cartilage chemical and mechanical properties by Brillouin and Raman micro-Spectroscopy</i>
14:20 – 14:40	Antony Bazir, Institut Lumière Matière, Univ Lyon1, France <i>Measuring sound attenuation in multicellular tumor spheroids across 2 decades</i>
14:40 – 15:00	Caterina Czibula, Institute of Bioproducts and Paper Technology, TU Graz, AT <i>Micromechanical characterization of wood pulp fibers with atomic force microscopy & Brillouin light scattering microspectroscopy</i>
15:00 – 15:30	Invited: Sophie Brasselet, Institut Fresnel, CNRS, Aix Marseille University, FR <i>Structural imaging in cells and tissues by polarized fluorescence and nonlinear microscopy</i>
15:30 – 15:55	Breakout discussion: Meet the speakers
15:55 – 16:00	Coffee break
Session 4 – Fundamental aspects of Brillouin light scattering Chair: Célia Sousa	
16:00 – 16:30	Invited: Nikolay Surovtsev, Institute of Automation and Electrometry, Russian Academy of Sciences, Novosibirsk, Russia <i>Brillouin spectroscopy of phospholipid bilayers</i>
16:30 – 16:50	Silvia Caponi, National Research Council of Italy (CNR), Italy <i>The role of multiple scattering in the evaluation of sound velocity and acoustic attenuation in Brillouin spectra</i>
16:50 – 17:10	Maurizio Mattarelli, University of Perugia, Italy <i>On the measure of mechanical properties by Brillouin scattering in microstructured samples</i>
17:10 – 17:40	Invited: Kristie Koski, University of California Davis, USA <i>Brillouin Imaging: Nifty tricks to get more from the data</i>
17:40 – 18:00	Breakout discussion: Meet the speakers
18:00 – 18:10	Coffee break
18:10 – 18:30	Best Poster 2019 Presentation: Tijana Lainović, University of Novi Sad, Serbia <i>Brillouin microscopy – illuminates the road to laser-based diagnosis in dental medicine</i>
18:30 – 19:10	Poster mini-presentations Chair: Nick Stone (1) Rana Amini, Max Planck Institute of Molecular Cell Biology and Genetics, Germany <i>Deconstructing horizontal cell migration in the zebrafish retina.</i> (2) Michelle Bailey, University of Exeter, UK <i>Monitoring the refractive index of tissue mimicking hydrogels using Raman microspectroscopy.</i>

	<p>(3) Giulio Capponi, University of Perugia, Italy <i>Polyacrylamide bulk hydrogel mechanical characterization in high frequencies domain by Brillouin light scattering.</i></p> <p>(4) Antonio Fiore, University of Maryland, USA <i>Simultaneous mapping of refractive index and longitudinal modulus via dual-geometry Brillouin microscopy.</i></p> <p>(5) Daniele Fioretto, University of Perugia, Italy <i>Viscoelastic parameters of hydrogel tissue models determined by Brillouin spectroscopy.</i></p> <p>(6) Ben Gardner, University of Exeter, UK <i>Food for thought: a combined micro Raman and Brillouin analysis of chewing gum.</i></p> <p>(7) Marjolaine Gonon-Caux, LaMCoS, France <i>High-pressure study for tribological application: from viscoelastic to glassy states of lubricants highlight by Brillouin spectroscopy.</i></p> <p>(8) Nuria Gontan Mendez, Instituto de Investigación Sanitaria Gregorio Marañón, Madrid, Spain <i>Evaluation of myocardial stiffness after myocardial infarction and pressure overload hypertrophy by Brillouin microspectroscopy.</i></p> <p>(9) Miloš Nikolić, University of Maryland, USA <i>Measuring mechanical response of cells to external cues in 2D and 3D environment.</i></p> <p>(10) Niki Tombolesi, University of Perugia, Italy <i>The architecture of bone tissue revealed by FTIR and Brillouin microscopies.</i></p> <p>(11) Valerya Zykova, Institute of Automation and Electrometry, Novosibirsk, Russia <i>Concentration dependence of the Brillouin peak parameters in biorelevant solutions and solutions of salts within the Hofmeister series.</i></p> <p>Q&A</p>
19:10 – 19:30	Social event led by Michelle Bailey

Friday 11th September - Zoom	
Session 5 – Instrument design and data analysis (I) Chair: Robert Prevedel	
13:30 – 14:00	Invited: Peter Török, Nanyang Technical University, Singapore <i>Modular Brillouin microscopy – an open source Brillouin microscope</i>
14:00 – 14:20	Irina Kabakova, University of Technology Sydney, Australia <i>Hollow-core fibre based Brillouin probe for remote mapping of micromechanics</i>
14:20 – 14:40	Benedikt Krug, TU Dresden, Germany <i>Capabilities of impulsive stimulated Brillouin microscopy for biomechanics</i>
14:40 – 15:10	Invited: Alberto Bilenca, Ben-Gurion University of the Negev, Israel <i>Biomechanical imaging by stimulated Brillouin scattering microscopy</i>
15:10 – 15:30	Breakout discussion: Meet the speakers
15:30 – 15:40	Coffee break
Session 6 – Instrument design and data analysis (II) Chair: Kareem Elsayad	
15:40 – 16:00	Carlo Bevilacqua, EMBL Heidelberg, Germany <i>Toward fast and less phototoxic Brillouin microscopy for high resolution longitudinal imaging</i>
16:00 – 16:30	Invited: Giuliano Scarcelli, University of Maryland, USA <i>Brillouin microscopy for cell and tissue imaging</i>
16:30 – 16:50	Fernando Perez-Cota, University of Nottingham, UK <i>Cell classification using phonon microscopy and deep learning</i>
16:50 – 17:10	Guqi Yan, Institut Lumière Matière, Univ Lyon1, France <i>Viscoelasticity of tumors submitted to osmotic pressure measured by Brillouin light scattering</i>
17:10 – 17:30	Jitao Zhang, University of Maryland, USA <i>Line-scanning Brillouin microscopy for fast biomedical imaging</i>
17:30 – 18:00	Breakout discussion: Meet the speakers
18:00 –	Closing remarks and Prizes announced