Conference programme

Monday July 1st 2024

(13:30-16:00) **TOFWERK and Teledyne Photon Machines Joint LA Workshop** @UGent-A&MS lab, Campus Sterre, Krijgslaan 281 – building S12, 9000 Ghent, Belgium

Tuesday July 2nd 2024

(13:30-15:00) **Nu Instruments and Teledyne Photon Machines Lab Demo** @UGent-A&MS lab, Campus Sterre, Krijgslaan 281 – building S12, 9000 Ghent, Belgium

(16:00-17:00) **Official start on-site registration**

(17:00-17:30) **Opening ceremony by Prof. dr. Frank Vanhaecke and Dr. ir. Thibaut Van Acker**: Welcome to EWLA2024 in Ghent, Belgium

(17:30-18:00) **OL - Opening lecture by Prof. dr. Detlef Günther**: Revisiting our understanding of laser ablation-ICPMS

(18:00-18:30) **IL - Invited lecture by Prof. dr. Takafumi Hirata**: Laser ablation for molecular analysis

(18:30-20:00) **Ice Breaker reception**

Wednesday July 3rd 2024

(08:30-09:00) **KL1 - Keynote lecture 1 by Dr. Martin Šala**: Beyond conventional calibration: advancing LA-ICP-MS methodologies

(09:00-10:00) **Session 1 chaired by Dr. Martin Šala – Fundamentals laser-matter interaction**:

- (09:00-09:15) **OT1 - Wolfgang Müller** - Why go shorter? Design and Rationale of a Dual-Wavelength (157 & 193 nm) Cryo-LA-ICP-MS/MS System
- (09:15-09:30) **OT2 - Tobias Erhardt** - Initial Performance of a Dual-Wavelength (157 & 193 nm) Cryo–LA–ICP–MS/MS System
- (09:30-09:45) **OT3 - Pascal Bohleber** - Ablating the transparent: testing femtosecond laser ablation ICP-MS in the UV absorption dead zone of ice
- (09:45-10:00) **OT4 - Hideki Iwano** - Laser-induced heating onto solid materials through annealing of fossil fission tracks

(10:00-10:30) **Coffee break sponsored by Normec Servaco**

(10:30-12:00) **Session 2 chaired by Prof. dr. Detlef Günther – Fundamentals particle formation, transport phenomena & standardization:**

- (10:30-10:45) **OT5** - **Dylan Käser** - Ablation effects in nitrogen for LA-N_2-MICAP-MS
- (10:45-11:00) **OT6** - **Kanoko Kurihara** - Analysis of Mechanism for Generation of Ions and Particles via Laser Ablation in Liquid (LAL) Technique using ICP mass spectrometry
- (11:00-11:15) **OT7** - **Laura Kronlachner** - A novel sample preparation and calibration approach for nanoparticle analysis using laser ablation single particle-ICP MS
- (11:15-11:30) **OT8** - **Beatriz Fernández** - Quantitative protein bioimaging in individual cells by LA-ICP-MS; labelling with ruthenium red and metal nanoparticles
- (11:30-11:45) **OT9** - **Ana Lores Padín** - Advancing Quantitative Mapping of Biogenic Carbonate Matrices with LA-ICP-TOF-MS
- (11:45-12:00) **OT10** - **Mathias Schannor** - LA-MC-ICP-MS analysis of Cu isotopes in biological material

(12:00-13:30) **Lunch break:**

- (12:40-13:20) **Lunch break seminar 1 by TOFWERK** (Oehoe main lecture room): Demonstration of the Workflow for 1000 Hz Bioimaging: From Sampling to Data Processing

(13:30-14:00) **KL2** - **Keynote lecture 2 by Prof. dr. Gunda Koellensperger**: LA-ICP-TOF-MS - the essential tool for spatial single cell metallomics

(14:00-15:00) **Session 3 chaired by Prof. dr. Gunda Koellensperger – Applications in Biology, Medicine & Life Sciences (part A):**

- (14:00-14:15) **OT11** - **Martin Schaier** - Unraveling cobalt skin permeation and cellular interactions: Novel insights from LA-ICP-TOFMS imaging
- (14:15-14:30) **OT12** - **Alexander P. Morrell** - Can metallomic imaging of TNBC tissues help predict the NACT response?
- (14:30-14:45) **OT13** - **Heike Traub** - Laser ablation ICP-ToF-MS to investigate the interaction of MRI contrast agents the extracellular matrix components
- (14:45-15:00) **OT14** - **Michaela Kuchynka** - Nano-savers for Ischemic stroke? Investigation using a combination of CT and LA-ICP-MS

(15:00-16:05) **Poster session 1 + coffee break sponsored by Glass Expansion:**

- **PP1** - **Marcel Guillong** - Investigating Ablation Rates in Geological Materials: A Comparison of UV fs and ns Laser Ablation
- **PP2** - **Antea Hrepić -** Empirical Insights into Crater Geometry: Modeling for Enhanced Laser Ablation Inductively Coupled Plasma Mass Spectrometry Analysis

- **PP3 - Ciprian Stremtan** - Laser Ablation – Cavity Ringdown Spectrometry – A novel method for in situ measurement of light stable isotope ratios
- **PP4 - Guillaume Girard** - Elemental fractionation in LA-ICP-MS quantified
- **PP5 - Tom Van Helden** - Dual-phase formation during LA-ICP-MS analysis of biological tissue
- **PP6 - Sarah Gilbert** - Sculpting the ablation plume - using QuadLock to enhance sensitivity for isotopic analyses
- **PP7 - Phil Shaw** - What's in a pixel?
- **PP8 - Helmut Ernstberger** - Technological prerequisites for high quality isotope ratio measurements using quadrupole ICP-MS
- **PP9 - Julien Leger** - The more, the better: new practices for U/Pb data reduction based on multiple reference material standardization
- **PP10 - Nathan Westwood** - Characterisation of nano-pellets as potential reference materials for Pb-Pb isotope analysis in ferromanganese crusts
- **PP11 - Nicholas West** - Real-time Measurement Of Mass Filter Position For Aligned LA–ICP–MS
- **PP12 - Ashley Norris** - Ultra-Trace-Element Imaging Using Aligned LA–ICP–MS With a Magnetic-Sector Single-Collector Mass Spectrometer
- **PP13 - Lukas Schlatt** - What is dynamic range in LA-ICP-MS and how can it be extended?
- **PP14 - George Cooper** - Femtosecond Laser Ablation for High-Speed Elemental Mapping
- **PP15 - Matthew Horstwood** - TACtool: A Targeting and Co-ordination tool for LA-ICP-MS and other spatially resolved methods
- **PP16 - Ethan Tonks** - Automated Selection of Sites for Chemical Microanalysis Using Image Segmentation
- **PP17 - Stijn J.M. Van Malderen -** Hardware and software integration improvements in LA-ICP-TOF-MS for acquisition rates of 1000 resolved multichannel pixels per second
- **PP18 - Martin Kutzschbach** - LA-ICP-MS/MS-based Rb-Sr isotope mapping for geochronology
- **PP19 - Jhanis Gonzalez** - High precision and spatial resolution chemical interrogation of planetary materials using fs-LA/LIBS in tandem with multi-collector ICP-MS
- **PP20 - C. Derrick Quarles Jr.** - Exploring the benefits of combining LIBS and LA-ICPMS for geological based applications
- **PP21 - Max Frank** - Tracing thin water layers from the leaf surface into the plant: how the laser burns the doubt
- **PP22 - Noémie Thiébaut** - Efficiency of foliar fertilization assessed by LA-ICP-MS
- **PP23 - Daniel Pergament Persson** - Suberin restricts potassium leakage from plant roots
- **PP24 - Lena Hiddeßen** - Quantitative bioimaging of boron-based contrast agents by means of LA-ICP-MS
- **PP25 - Ana Justo-Vega** - Titanium imaging in fish tissues exposed to titanium dioxide nanoparticles by quantitative laser ablation-inductively coupled plasma-mass spectrometry
- **PP26 - Paula Menero-Valdés** - Determination of target metals and proteins associated with neurodegeneration in tissue sections of a mouse model using LA-ICP-MS: Study of Zn supplementation

- **PP27 - Olga Minaeva** - Imaging of environmental toxic metals distribution in the brain by LA-ICP-MS
- **PP28 - Marie Novotná** - High-resolution LA-ICP-MS imaging of Pt-derivates in single cell and tumour tissue
- **PP29 - Michaela Vašinová Galiová** - High-resolution LA-ICP-MS and tracing Ru-based metallocene in tumour cells
- **PP30 - Lingna Zheng** - Mass spectrometry imaging of renal alternations in mice with cisplatin-induced acute kidney injury treated with CeO2 nanoparticle
- **PP31 - Hunter Andrews** - Investigating the Use of Simultaneous Laser-Induced Breakdown Spectroscopy/Laser Ablation–Inductively Coupled Plasma–Time-of-Flight–Mass Spectrometry for the Analysis of Biological Materials
- **PP32 - Cinzia Chiurlia** - Platinum nanoparticles enhance LA-ICP-MS signal for trace element detection in serum spots
- **PP33 - Alex Griffiths** - Metallomic imaging of microbial nutritional immunity

(16:05-16:30) **UT1 - Upcoming talent award presentation 1 by Kristina Mervič**: Correcting Ablated Mass Differences in 2D LA-ICP-MS Mapping through Ablation Volume-Assisted Calibration

(16:30-17:00) **Session 4 chaired by Kristina Mervič – Applications in Biology, Medicine & Life Sciences (part B):**

- (16:30-16:45) **OT15 - Johannes Schmeinck** - Laser ablation-atmospheric pressure chemical ionization-time of flight-mass spectrometry for molecular imaging
- (16:45-17:00) **OT16 - Meng Wang** - Elemental and molecular Imaging of the boron drug BPA in the tissue sections of tumor bearing mice using LA-ICP-MS and DESI-MS

(18:00-19:00) **Boat trip** (Korenlei)

(19:00-23:00) **Belgian evening** (St. Peter's Abbey)

Thursday July 4th 2024

(08:30-09:00) **KL3 - Keynote lecture 3 by Dr. Alicia Cruz-Uribe**: Prospects and challenges for in situ beta decay geochronology by MC-ICP-MS/MS

(09:00-10:00) **Session 5 chaired by Dr. Alicia Cruz-Uribe – Fundamentals isotopic analysis**:

- (09:00-09:15) **OT17 - Michael J. Pribil** - Multiple Sulfur Isotope Ratios by LA MC-ICP-MS and LA MC-ICP-MS/MS: Unraveling Minerals at the Micron Scale
- (09:15-09:30) **OT18 - Enrico Cannaò** - In-situ B and Ti isotopes in amphibole: a new potential geochemical tool
- (09:30-09:45) **OT19 - Stijn Glorie** - In situ molybdenite and shale Re-Os geochronology: a comparison of reaction gasses
- (09:45-10:00) **OT20 - Fabien Pointurier** - Implementation of laser ablation – ICPMS coupling for isotopic analysis of uranium micro-particles

(10:00-10:30) **Coffee break**

(10:30-12:00) **Session 6 chaired by Dr. Amy J. Managh – Fundamentals qualitative and quantitative elemental and isotopic mapping:**

- (10:30-10:45) **OT21** - **Nathan T. Westwood** - The application of LA-ICP-MC-MS for quantified, high spatial resolution imaging of Pb-Pb isotope ratios in ferromanganese crusts
- (10:45-11:00) **OT22** - **Dany Savard** - Advances on 3D-mapping by fs-LA-ICP-TOF-MS: quality assessment for the analysis of melt inclusions in Hawaiian olivine
- (11:00-11:15) **OT23** - **Yoshiaki Kon** - Mineral liberation analysis using LA-ICPMS
- (11:15-11:30) **OT24** - **Iker Basabe Mendizabal** - Towards 1,000 pixels/s acquisition rate for elemental mapping via LA-ICP-MS
- (11:30-11:45) **OT25** - **Kharmen Billimoria** - Improving calibration standards for LA-ICP-MS bioimaging
- (11:45-12:00) **OT26** - **Pascal Becker** - Fossilization of Leaves for Quantitative Bio-Imaging using LA-ICP-TOFMS

(12:00-13:30) **Lunch break:**

- (12:40-13:20) **Lunch break seminar 2 by Elemental Scientific Lasers** (lecture room A, 1st floor) Advancements from ESL in the field of super-fast elemental imaging by LA-ICP-MS, LIBS and LIBS-ICP-MS
- (12:40-13:20) **Lunch break seminar 3 by Teledyne Photon Machines** (lecture room B, 1st floor) Significant scientific advances made by the laser ablation community in the last year – a discussion of published examples

(13:30-14:00) **KL4** - **Keynote lecture 4 by Prof. dr. Jorge Pisonero**: Pros and Cons of LA-ICP-MS for fast, sensitive and high-spatially resolved elemental mapping of challenging samples

(14:00-15:00) **Session 7 chaired by Prof. dr. Jorge Pisonero – Applications in Geology, Archaeology, Earth & Planetary Sciences (part A)**

- (14:00-14:15) **OT27** - **Andreas Riedo** - Towards the flight design and concept of operations of the CLPS- LIMS systems for NASAs Artemis program
- (14:15-14:30) **OT28** - **Piers Larkman -** Effective data collection for large area mapping: insights from polar ice cores
- (14:30-14:45) **OT29** - **Ivan Belousov** - Deconvolution of mixed LA ICPMS signals and quantification of trace element compositions of microinclusions in minerals
- (14:45-15:00) **OT30** - **Markus Wälle** - Boron isotope ratio analysis of Cu-bearing tourmaline by LA-ICP-TOF-MS for origin determination

(15:00-16:05) **Poster session 2 + coffee break:**

- **PP34** - **Elisabeth Foels** - How to assess limits of detection for single-cell elemental bioimaging by LA-ICP-MS

- **PP35** - **David Loibnegger** - LA-ICP-TOFMS imaging reveals Pt(IV)-drug bioaccumulation in tumor tissue at the single-cell level
- **PP36** - **Hugo Louet** - Development of LA-ICP-MS analysis for quantitative elemental mapping in dendrochemistry
- **PP37** - **Jeffrey Oalmann** - Comparing methods for quantifying elemental images obtained by quadrupole and time-of-flight LA-ICP-MS
- **PP38** - **Daniel A. Frick** - Pseudo-Isotope Ratios by LA-ICP-OES for Sea Surface Temperature Reconstruction
- **PP39** - **Stefan Wagner** - In situ mapping of elemental dissolution at ultra-trace levels during aqueous corrosion of Al alloys
- **PP40** - **Jay Thompson** - False signals: quantification issues of trace Si in non-silicate minerals by LA-ICP-MS
- **PP41** - **Adrien Vezinet** - Concurrent determination of Sr-isotope signature and trace elements contents of depleted glasses via laser ablation split stream: Pros and Cons Of Different Approaches
- **PP42** - **Herbert Siegmund** - Analysis of ultra-fast transient signals by LA-MC-ICPMS – overcoming instrumental limitations
- **PP43** - **Ciprian Stremtan** - In-situ, simultaneous measurement of oxygen and carbon isotope ratios via LA IRMS – study case on inorganic carbonates
- **PP44** - **Ciprian Stremtan** - Laser ablation IRMS analysis of **δ**13C in creep affected Picea abies from Făgăraș Mountains, Romania
- **PP45** - **Claire Aupart** - Trace elements in quartz: a tool for sediment provenance
- **PP46** - **Fatima Zohra Bouhdayad** - Late Neogene ENSO variability in the SE Pacific recorded in bivalve shells through Laser Ablation ICP-MS
- **PP47** - **Stepan Chernonozhkin** - Probing the evolution of primitive achondrite parent bodies: insights from LA-ICP-MS analysis of silicate minerals
- **PP48** - **Helmut Ernstberger** - Automated High Throughput Analysis of Rare Earth Elements in Large Batches of Mining Discovery Samples by LA-ICP-MS
- **PP49** - **Isabelle Genot** - Multi-element analyses of silicate glasses using a femtosecond laser ablation system coupled to an ICP-MS/MS
- **PP50** - **Pamela Guttiérrez** - S isotopic analyses of S-bearing compounds using a femtosecond laser ablation system coupled to an ICP-MS/MS
- **PP51** - **Youn-Joong Jeong** - Imaging of Geological sample by fs LA-ICP-MS with ARIS
- **PP52** - **Nathan Miller** - Utility of LA-ICP-MS methods for reconstructing hydroclimate from stalagmite and cave monitoring archives
- **PP53** - **Ségolène Rabin** - High-resolution in situ Fe isotope measurements of Belgian micrometeorites by femtosecond laser ablation MC-ICP-MS
- **PP54** - **Lorenzo Tavazzani** - Synthesising homogeneous calcium carbonate reference materials for in situ determination of U–Pb and Sr isotopes
- **PP55** - **Massimo Tiepolo** - Historical trends of metal pollution in the metropolitan area of Milano, Italy: a combined dendro-chemical, dendro-magnetic and dendro-XRD approach
- **PP56** - **Maarten Van Brussel** - Advancements in Isotope Analysis for Geochronology: Integrating MS/MS and Laser Ablation
- **PP57** - **Róbert Arató** - Graphite LIBS analysis: Opportunities for elemental mapping and multivariate classification
- **PP58** - **Kengo Ito** - Ilmenite age determination using LA-ICP-MS technique

- **PP59** - **Remi Dallmayr** - New cryogenic ablation cell technology for high sample throughput impurity mapping in ice-cores with LA-ICP-MS
- **PP60**- **David Douglas** - SelfSeal technology-based open-cell laser ablation system for trace elements analysis of full-size archaeological artefacts: application on historical Chinese enamelled copperware
- **PP61** - **Ashlea Wainwright** - Comparing interference removal tools for in situ analysis of 87Sr/86Sr in bioapatite
- **PP62** - **C. Derrick Quarles Jr.** - Understanding the Elemental Composition of SEI and CEI Layers in Li-Ion Batteries
- **PP63** - **Alban Moradell-Casellas** - Fast analysis of trace elements and lithium isotopy by LA-(MC)-ICP-MS for the traceability of lithium in the battery supply chain
- **PP64** - **Petr Rudolf** - Development of the LA-ICP-MS method for liquid analysis
- **PP65** - **Agnieszka Stoklosa** - LA-ICP-MS Calibration Strategy to Investigate the Ion Transport in Concrete

(16:05-16:30) **UT2** - **Upcoming talent award presentation 2 by Dr. Sota Niki**: Online multiple-isotope analysis of individual nanoparticles generated through femtosecond laser ablation

(16:30-17:00) **Session 8 chaired by Dr. Sota Niki – Applications in Geology, Archaeology, Earth & Planetary Sciences (part B):**

- (16:30-16:45) **OT31** - **Pim Kaskes** - Blasting dinosaurs in Brussels: new μXRF and LA-ICP-MS setup to unravel the origin of fossil bonebeds
- (16:45-17:00) **OT32** - **Robert Anczkiewicz** - Deducing Upper Paleolithic woolly mammoth mobility patterns with high spatial resolution trace element, O and Sr isotope analyses

(19:00-…) **Gala dinner and laser party** (Fish Market, Rekelingestraat 5, 9000 Ghent)

Friday July 5th 2024

(09:00-9:30) **KL5** - **Keynote lecture 5 by Dr. Vassilia Zorba**: Advancing Ultrafast Laser Ablation Sampling: From Femtosecond Filamentation to GHz Bursts of Ultrafast Laser Pulses.

(09:30-10:00) **Session 9 chaired by Dr. Vassilia Zorba – Fundamentals tandem multi-sensor techniques**:

- (09:30-09:45) **OT33** - **Jakob Willner** - Acquisition parameter optimization for single pulse resolved simultaneous LA-Q-ICP-MS multielement analysis
- (09:45-10:00) **OT34** - **Benjamin T. Manard** - Utilization of Laser-Based Sampling for High-Throughput Particle Analysis

(10:00-10:30) **Coffee break**

(10:30-12:00) **Session 10 chaired by Dr. ir. Thibaut Van Acker – Fundamentals data processing, standardization and applications in Material & Industrial Sciences:**

- (10:30-10:45) **OT35** - **Salome Gruchola** - Exploring On-Board Data Reduction Techniques for Improved Space Mission Returns
- (10:45-11:00) **OT36** - **Keith MacRenaris** - LA-ICP-TOF-MS Imaging in Reproductive Biology: Elemental Changes as a Marker for Fibrosis and Infertility in AIRE Deficient Male Mice
- (11:00-11:15) **OT37** - **Claude Molitor** - Introducing a general cell membrane marker for bioimaging with LA-ICP-(TOF)MS
- (11:15-11:30) **OT38** - **Lena Michaliszyn** - Improved Quantification of Solid Samples using LA-ICP-MS with Standard Addition and Isotope Dilution: A Promising New Technique
- (11:30-11:45) **OT39 - Yuan Shang -** Application of in-situ Laser Ablation ICP-MS analysis in developing geochemical fingerprints to trace cobalt and nickel along the battery value chain
- (11:45-12:00) **OT40** - **Christoph Walkner** - Two approaches for elucidating the origin of non-metallic inclusions in steels using LA-ICP-MS

(12:00-12:30) **Closing and award ceremony**

(12:30-13:30) **Farewell lunch**

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00 – 8:30			Pick-up badges and conference bags	Pick-up badges and conference bags	
8:30 – 9:00			Keynote lecture Martin Šala	Keynote lecture Alicia Cruz-Uribe	
9:00 – 9:30			S1: Fundamentals laser-matter interaction	S5: Fundamentals isotopic analysis	Keynote lecture Vassilia Zorba
9:30 – 10:00					S9: Fund. multi-sens. techniques
10:00 – 10:30			Coffee break	Coffee break	Coffee break
10:30 – 11:00			S2: Fundamentals particle formation, transport phenomena and standardization	S6: Fundamentals qualitative and quantitative elemental/isotopic mapping	S10: Fund. data processing, standardization and Apps. Material & Industrial Sciences
11:00 – 11:30					
11:30 – 12:00					
12:00 – 12:30			Lunch break (12.00-13:30)	Lunch break (12.00-13:30)	Closing + award ceremony
12:30 – 13:00			Lunch break seminar TOFWERK (12:40-13:20)	Lunch break seminars ESL and Teledyne Photon Machines (12:40-13:20)	Farewell lunch
13:00 – 13:30					
13:30 – 14:00	TOFWERK + Teledyne workshop @A&MS (Campus Sterre, S12)	Nu Instruments Lab Demo @A&MS (Campus Sterre, S12)	Keynote lecture Gunda Koellensperger	Keynote lecture Jorge Pisonero	
14:00 – 14:30			S3: Applications Biology, Medicine, Life Sciences (A)	S7: Applications Geology, Archaeology, Earth & Planetary Sciences (A)	
14:30 – 15:00					
15:00 – 15:30			Poster session 1 + coffee break	Poster session 2 + coffee break	
15:30 – 16:00					
16:00 – 16:30		Pick-up badges and conference bags	S4: Applications Biology, Medicine, Life Sciences (B)	S8: Applications Geology, Archaeology, Earth & Planetary Sciences (B)	
16:30 – 17:00					
17:00 – 17:30		Opening ceremony			
17:30 – 18:00		Opening lecture Detlef Günther			
18:00 – 18:30		Invited lecture Takafumi Hirata	Boat trip (Korenlei)		
18:30 – 19:00		Ice breaker reception			
19:00+			Belgian evening (St. Peter's Abbey)	Gala diner (Old Fish Market)	