The 4th Aquaphotomics International Conference

Kobe University, Centennial Hall (Rokko Hall)

March 20 - 22, 2021

SATURDAY March 20, 2021

On site & On line (English & Japanese real-time interpretation)

AQUAPHOTOMICS WORKSHOP

Chairperson: Roumiana Tsenkova

9:30	10:30	A closer look at preprocessing with focus on aquaphotomics	Federico Marini
10:30	12:00	Aquaphotomics tutorial - from experiment to interpretation	Jelena Muncan
12:00	13:00	꩜ Lunch break	

AQUAPHOTOMICS OPEN LECTURE

Chairperson: Masato Yasui

13:00	14:30	From non-invasive disease diagnostics to aquaphotomics	Roumiana Tsenkova
14:30	15:00	꩜ Coffee break	

LEADING EDGE OF SCIENCE

Chairperson: Christian Huck

15:00	15:40	Encounter with peculiarity in physical properties of water and expectation for definite developments of aquaphotomics	Mutsuo Iwamoto
15:40	16:20	Molecular spectroscopy studies of water from Far-ultraviolet to Far-infrared/Terahertz and Raman spectroscopy	Yukihiro Ozaki
16:20	16:50	Water biology and medicine - roles of aquaporins in biological system	Masato Yasui
16:50	17:20	꩜ Coffee break	

FURTHER DEVELOPMENTS

Chairperson: Zoltan Kovacs

17:20	17:50	Modern tools of NIR spectroscopy in water-related analysis. Miniaturized spectrometers, quantum chemistry and neural networks	Christian Huck[※1]
17:50	18:20	Aquaphotomics Laboratory in Yunosato	Shogo Shigeoka
18:20	18:50	Aquaphotomics science - looking at nature through water spectral patterns	Jelena Muncan
19:00		꩜ Recess	

※1 The invitation is supported by Naito Foundation

SUNDAY March 21, 2021

FROM WATER STRUCTURE AND SPECTRAL PATTERNS TO DIAGNOSTICS

Chairperson: Jelena Muncan

9:00	9:30	Analyzing the water in chemical changes by Temperature-Dependent Near-Infrared Spectroscopy	Xuengang Shao
9:30	9:50	Aquaphotomics profiling of blood serum vs. plasma offers complementary modes of discriminating *Manheimia heamolytica* infection in dairy calves	Carry Vance
9:50	10:10	Aquaphotomics profile of near Infrared spectral signatures from four Anastomosis groups of the fungi *Rhizoctonia solani*	Mariana Santos Rivera
10:10	10:30	ꕥ Coffee break	

QUANTUM BRAIN DYNAMICS - ROLE OF WATER

Chairperson: Hiroshi Murakami

10:30	11:00	Modelling the measured microtubule conductivity and capacitance as a function of ionic concentrations	Jack Tuzsynski
11:00	11:20	Non-equilibrium quantum brain dynamics in 3+1 dimension with water dipoles and photons	Akihiro Nishiyama

WATER AS A PART OF BIOLOGICAL PROCESSES

Chairperson: Sae Tanaka

11:20	11:40	Studies on cryopreservation mechanism using Trehalose-transporter expressing cells	Tsutomu Uchida
11:40	12:00	Assessment of biological functions and metabolic activity during embryogenesis by water analysis using near-infrared spectroscopy	Mika Ishigaki
12:00	13:00	ꕥ Lunch break	

HYDRATION & INTERFACIAL WATER

Chairperson: Shigeaki Morita

13:00	13:30	Role of interfacial water in determining the interaction of proteins and cells with hydrated materials	Masaru Tanaka
13:30	13:50	Investigation on the reaction mechanism for dehydration of $Mg(OH)_2$ and hydration of MgO by NIR spectroscopy	Masato Takeuchi
13:50	14:10	Water at biointerfaces: what makes surfaces bioinert?	Tomohiro Hayashi
14:10	14:30	Investigation of the electronic states of water in hydrate-melt	Yusuke Morisawa
14:30	15:00	ꕥ Coffee break	

AQUAPHOTOMICS FOR FOOD QUALITY CONTROL

Chairperson: Mika Ishigaki

15:00	15:30	Food quality and process investigated through water absorption variations in NIR range	Tiziana M.P. Cattaneo
15:30	15:50	Dairy products analysis – near-infrared spectroscopy and aquaphotomics approach	Stefka Atanassova
15:50	16:10	Recent applications of aquaphotomics in the field of food science	Zoltan Kovacs
16:10	16:30	Can aquaphotomics improve quality prediction of intact fruit?	Harpreet Kaur
16:30	16:45	ꕥ Coffee break	

WATER STRUCTURE - NEW INSIGHTS & IMPLICATIONS **Chairperson: Krzysztof Bec**

16:45	17:15	Extending the spectrum: NIR spectroscopy of crystalline H_2O- ices	Christina Tonauer
17:15	17:35	Water structure and water mirror effect in NIR region. A perspective from the quantum chemical simulations.	Justyna Grabska
17:35	17:55	Detection of dissolved salts using the water spectrum	Herman Offerhaus
17:55	18:15	Near Infrared and aquaphotomic analysis of water absorption in lactate containing media	Nystha Baishya
18:15	19:00	**AQUAPHOTOMICS INTERNATIONAL ASSEMBLY**	
19:00	19:45	**POSTER SESSION I**	
19:45		℘ Recess	

MONDAY March 22, 2021

WATER & OTHER BIOMOLECULES **Chairperson: Xuegang Shao**

9:00	9:30	The role of water activity in the thermodynamic response of lipid interphases	E. Anibal Disalvo
9:30	9:50	Near infrared spectroscopy and multivariate analysis for the study of water in lipidic membranes	Jorge J. Wenz
9:50	10:10	Understanding hyaluronic acid induced variation of water structure by near-infrared spectroscopy	Hengchang Zang
10:10	10:30	Details of glucose solution near-infrared band assignment revealed using deuterium oxide and glucose isotopes	Sae Tanaka
10:30	10:40	℘ Coffee break	

WATER STRUCTURE & HYDRATION **Chairperson: Masato Takeuchi**

10:40	11:00	Recent and future X-ray measurements of pure water	Craig Schwartz
11:00	11:20	Concentration-dependent near-infrared spectra of water-aprotic organic solvents binary systems	Shigeaki Morita
11:20	11:40	Highly precise characterization of the hydration state upon thermal denaturation of globular protein	Keichiro Shiraga
11:40	12:00	Study on the dynamic state of free, hydrogen-bonded water with wood by near-infrared hyperspectral imaging	Te Ma
12:00	13:00	℘ Lunch break	

POSTER SPECIALS **Chairperson: Jelena Muncan**

13:00	13:15	NIR Spectroscopy and aquaphotomics in Carambola B10 Averrhoa	Siti Anis Dalila Muhammad Zahir
13:15	13:25	Water Changes Spectral Patterns When Perturbed by Sound Frequencies	Ryo Takagi
13:25	13:35	Understanding of Yogurt Bio-Functional Water	Alexander Stoilov
13:30	13:45	**SPONSORS**	
13:45	14:30	**POSTER SESSION II**	
14:30	15:00	**Post-workshop discussion / Questions & Answers**	Jelena Muncan

FORCES SHAPING THE WATER - BEYOND SENSING TO BIOMODULATION **Chairperson: Justyna Grabska**

15:00	15:30	Microwaves and nanosecond electric pulses for analysis and influencing of microtubule systems	Michal Cifra
15:30	16:00	Heretics or pioneers: Viktor Schauberger and Wilhelm Reich - a fresh look	Pierre Madl
16:00	16:20	ꕥ Coffee break	

SPECTRAL PATTERN OF BIOMATERIAL - WATER INTERACTION **Chairperson: Masaru Tanaka**

16:20	16:50	Spectral imaging and spectroscopic methods for characterizing and monitoring biomaterial/water interactions	Aoife Gowen
16:50	17:10	Aquaphotomics for revealing the interaction between water molecular and surface: Potential applications to predict cell response and biofilm formation	Junli Xu
17:10	17:20	ꕥ Coffee break	

SPECTRAL PREPROCESSING FOR AQUAPHOTOMICS **Chairperson: Federico Marini**

17:20	17:50	New trends in the pre-processing of near-infrared spectra	Jean Michelle Roger
17:50	18:10	Non-linear regression and artificial neural networks in NIR spectroscopy: insights into fundamental phenomena and impact on practical applications in water-related scenarios	Krzysztof Bec
18:10	18:30	The effects of water on scattering: taking into account path-length modifications	Alexander Mallet
18:30	19:00	**POSTER AWARD CEREMONY & CLOSING SPEECH**	Roumiana Tsenkova
19:00		ꕥ Goodbye	

Until we meet again!