bmpn.ch the biomedical photonics network

The yearly meeting of the Biomedical Photonics Network 2020

Progress in Biomedical Photonics

December 11, 2019 from 9:00 to 16:45

Program

Chair Martin Wolf

09:00-09:10 Welcome and introduction
Martin Wolf, President BMPN

09:10-09:45 Invited talk: Brain cytochrome-c-oxidase assessed by NIRS as mitochondrial biomarker in depressive episodes
Lisa Holper, University Hospital of Psychiatry, University of Zurich

09:45-10:00 Individual nanoparticles as multiharmonic sources
Gabriel Campargue, JP Wolf, L Bonacina, University of Geneva

10:00-10:15 Phase imaging through a fiber bundle using deep neural networks
Eirini Kakkava, N Borhani, B Rahmani, U Teğin, G Konstantinou, C Moser, D Psaltis, EPFL

10:15-10:30 Towards quantitative photoacoustic imaging of blood oxygenation with multiple illuminations and learned spectral decoloring
Thomas Kirchner, M Frenz, University of Bern

10:30-11:00 Break

Chair Ursula Wolf

11:00-11:15 Physico-chemical mechanisms involved in the prompt and delayed fluorescence of protoporphyrin IX
Aurélien Gregor, G Croizat, E Gerelli, J Joniova, G Wagnières, EPFL

11:15-11:30 A numerical approach to near-infrared spectroscopy device design
Oliver da Silva-Kress, T Cantieni, U Wolf, University of Bern

11:30-11:45 Optical single-walled carbon nanotube-based bio-sensor for glucose monitoring
Vitalijs Zubkovs, G Orawez, I Stergiou, AA Boghossian, S Cattaneo, CSEM Landquart, EPFL Lausanne

11:45-12:00 Optical heartrate monitoring using a sensor embedded in an ear tag for pigs
Loïc Jeanningros, F Braun, P Renevey, S Dasen, P Theurillat, P Liechti, V Schaffter, M Lemay, A Herlin, C Ollagnier, C Verjus, CSEM Neuchâtel

12:00-12:15 Occlusion tests with novel time domain near infrared optical tomography
Jingjing Jiang, A Di Costanzo Mata, S Lindner, E Charbon, M Wolf, A Kalyanov, University of Zurich, EPFL

12:15-12:30 High precision in vivo assessment of Alzheimer's β-amyloid deposits with multi-scale optical imaging - from single plaques to whole brain mapping
Ruiqing Ni, Z Chen, XL Deán-Ben, D Kirschenbaum, G Shi, A Villois, Q Zhou, A Crimi, P Arosio, F Voigt, M Rudin, R Nitsch, KF Helmchen, PR Nilsson, A Aguzzi, J Klohs, D Razansky, University of Zurich, ETHZ

12:30-13:30 Lunch break and poster setup

13:30-15:00 Poster session

15:00-15:30 Break

Chair Martin Frenz

15:30-15:45 Evaluation of RPE-damage thresholds for SRT in the range of 2 to 20 microseconds by vitality stain and SD-OCT M-scans
Christian Burri, University of Bern, Bern University of Applied Sciences

15:45-16:00 Multi-modal and multi-scale X-ray analytical imaging for 3D digital histopathology to enhance precision medicine
Robert Zboray, A Dommann, A Neels, EMPA

16:00-16:05 Voting on the award winners

16:05-16:40 Invited talk: Protoporphyrin IX: a Swiss army knife biomolecule for biomedical optics
Georges Wagnières, EPFL

16:40-16:45 Award ceremony

We gratefully acknowledge financial support:

SSOM Swiss Society for Optics and Microscopy
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GMP GENERAL MICROTECHNOLOGY & PHOTONICS
EXCITE ZURICH IMAGING

Registration is free, but mandatory
Please register through bmpn2020.weebly.com at the latest by December 3, 2020; for further information about the Biomedical Photonics Network: www.bmpn.ch. To become member of the BMPN, join the SSOM: www.ssom.ch

Contacts

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For questions on organization: Svenja Hänni (Svenja.Haenni@ikim.unibe.ch)

Poster Session

Poster 1 Polymer optical fibers integrated into woven structures for textile-based biomedical applications
Nazanin Ansari, A Pfammatter, M Camenzind, Simon Annaheim, RM Rossi, Empa St. Gallen, OST

Poster 2 Cortical activation and human movement: a preliminary combined fNIRS and IMUs study during different walking modalities
Valeria Belluscio, G Casti, M Ferrari, V Quaresima, G Vannozzi, University of Rome, University of L'Aquila, Italy

Poster 3 Detectability of hypoxic volumes in human muscle tissue using near-infrared spectroscopy
T. Cantieni, O. da Silva-Kress, U. Wolf, University of Bern

Poster 4 Vegetative hyperscanning: a heart rate coherence and heart rate variability analysis of pairings in self-paced interpersonal motor entrainment
Stephan Flory, S Guglielmini, VL Marcar, F Scholkmann, Martin Wolf, University of Zurich, University Hospital Zurich

Poster 5 A method to perform functional near-infrared spectroscopy in diffuse optical tomography on traumatic brain injury patients in the intensive care unit: a prospective study on healthy volunteers
Mario Forcione, AM Chiarelli, D Perpetuini, DJ Davies, A Merla, A Belli, University Hospitals Birmingham, University of Birmingham UK, University 'G. D'Annunzio' of Chieti-Pescara, Italy

Poster 6 Imaging artifacts for the visual feedback system during smart laser osteotomy
Arsham Hamidi, YA Bayhaqi, A Navarini, PC Cattin, A Zam, University of Basel, University Hospital Basel

Poster 7 A multifunctionnal 224x 272 pixels SPAD array with 200 ps temporal resolution
André Stefanov, University of Bern

Poster 8 Color-dependent changes in humans during a long-term stimulation involving colored light exposure and a cognitive task: A SPA-fNIRS study
Hamoon Zohdi, F Scholkmann, U Wolf, University of Bern

Poster 9 Chronobiological variability of tissue autoluminescence and tissue oxygenation in humans
Felix Scholkmann, University of Zurich, University of Bern