

## Progress in Biomedical Photonics 2023

December 15, 2023 from 9:15 to 16:40

Kuppelsaal on top of the [main building](#) of the University of Bern

### Program

09:15-09:45 Registration, coffee and hang up posters in front of the Kuppelsaal.

Presentations (Room Kuppelsaal) Chair Ursula Wolf

09:45-09:55 Welcome and introduction  
Martin Wolf, President BMPN

09:55-10:10 Assessing Speech Processing During a Functional Near-Infrared Spectroscopy Task in Normal Hearing Listeners & Cochlear Implant Users  
András Bálint\*, W Wimmer, C Rummel, M Caversaccio, S Weder  
Uni Bern, Inselspital

10:10-10:25 3D non-destructive histology of follicular thyroid tumors by X-ray imaging for precision medicine  
Kiarash Tajbakhsh\*, O Stanowska, A Neels, A Perren, R Zboray  
Empa, Uni Fribourg, Uni Bern

10:25-10:40 Advancing Cardiovascular Monitoring: Transitioning from LED to Laser Light Sources in Optical Sensor  
Benjamin Burgat\*, D Boiko, P Theurillat, L Balet, S Lecomte, D Ferrario, M Lemay  
CSEM.

10:40-10:55 Time domain near infrared optical tomography utilizing full temporal data: a simulation study  
Letizia Lanini\*, A Kalyanov, M Ackermann, E Russomanno, A Di Costanzo Mata, M Wolf, J Jiang  
Uni Zurich, USZ

10:55-11:10 Detection of Cardiac Arrhythmias from Photoplethysmography Signals  
Loïc Jeanningros\*, J Van Zaen, C Aguet, M Le Bloa, A Porretta, C Teres, C Herrera, G Domenichini, P Pascale, A Luca, J Solana Muñoz, JM Vesin, JP Thiran, E Pruvot, M Lemay, F Braun  
CSEM, EPFL, CHUV

11:10-11:25 Simulation Tool for NIROT Signals in Multilayered Structures  
Delia Amir Hosseini\*, M Ackermann, E Russomanno, M Wolf, J Jiang, A Kalyanov  
Uni Zurich, USZ

11:25-11:40 Micrometer resolution additive manufacturing through highly scattering media  
Qianyi Zhang\*, A Boniface, VK Parashar, MAM Gijs, C Moser  
EPFL

11:40-11:55 Phase Retrieval: from Computational Imaging to Machine Learning  
Jonathan Dong\*, L Valzania, A Maillard, T Pham, S Gigan, M Unser  
EPFL, PSL, Sorbonne, ETHZ

\*competing for best presentation award

- 11:55-12:10 Faster than Fluorescence: Harmonic Imaging of Stem Cells in Whole Blood at GHz Pixel Rate  
Alexandra Latshaw\*, S Karpf, N Glöckner Burmeister, L Dubreil, S Ghosh, R Hollandi, J Pichon, I Leroux, A Henkel, V Lutz, J Jurkevicius, V Kilin, T Kutscher, A Vogel, RA Huber, P Horvath, K Rouger, L Bonacina  
Uni Geneva, Uni Luebeck, Biological Research Centre
- 12:10-12:25 Tomographic volumetric bioprinting of 3D pancreatic cancer models  
Viola Sgarminato\*, J Madrid-Wolff, C Tonda-Turo, G Ciardelli, C Moser
- 12:30-14:30 Lunch break and poster viewing in front of Kuppelsaal

Presentations (Room Kuppelsaal) Chair Martin Frenz

- 14:30-15:05 Invited talk: The cleaning crew of the lungs  
Martin Frenz  
Uni Bern
- 15:05-15:40 Invited talk: Functional near-infrared spectroscopy (fNIRS) and near-infrared spectroscopy based cerebral oximetry (NIRSCO): Past, present and future  
Felix Scholkmann  
Uni Zurich, USZ
- 15:40-15:55 Cerebral and peripheral tissue oximetry in paediatric population: establishing expected values from TD-NIRS measurements  
Michele Lacerenza  
Pionirs
- 15:55-16:10 A review of recent developments on CMOS single-photon avalanche diode-based cameras for biomedical time-resolved applications  
Claudio Bruschini, E Charbon  
EPFL
- 16:10-16:25 Multimodal multiphoton imaging's place in life sciences  
Stefanie Kiderlen  
Prospective Instruments
- 16:25-16:40 Award ceremony and closing

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We gratefully acknowledge financial support:

**HAMAMATSU**  
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## Poster Session

- Poster 1 The Association of Mother-Infant neural synchrony and bonding – Preliminary Results  
Debora Suppiger\*, S Guglielmini, T Reinelt, M Wolf, G Natalucci  
University of Zurich, University Hospital Zurich
- Poster 2 Angular dependence of white and grey matter scattering coefficients from wide-field time-of-flight measurements  
Pascal Tijkorte\*, G Hannink, M Frenz, A Stefanov  
University of Bern
- Poster 3 Imaging cerebral blood vessels using near-infrared optical tomography  
Djazia Yacheur\*, M Ackermann, T Li, A Kalyanov, E Russomanno, A Di Costanzo Mata, M Wolf, J Jiang  
University of Zurich, University Hospital Zurich
- Poster 4 Deep learning-assisted OCT for early detection of thermal damage during laser osteotomy  
Aikaterina Grava\*, A Hamidi, A Gonzalez-Jimenez, AA Navarini, PC Cattin, F Canbaz  
University of Basel, University Hospital Basel
- Poster 5 Photoresponsive Nanocarriers Based on Lithium Niobate Nanoparticles for Harmonic Imaging and On-Demand Release of Anticancer Chemotherapeutics  
Paulí Figueras\*, A Gheata, G Gaulier, G Campargue, T Leinen, J Vuilleumier, S Kaiser, I Gautschi, F Riporto, S Beauquis, D Staedler, D Diviani, L Bonacina, S Gerber-Lemaire  
University of Geneva
- Poster 6 The effect of a lipid surface coating on the permeation of upconverting nanoparticles through a 3D human lung epithelial model  
Doyoung Kim\*, GA Mandl, M Balkota, J Vernaz, S Huang, S Constant, P Maechler, J Capobianco, L Bonacina  
University of Geneva

## Poster Session

- Poster 7 Modular and Portable Time-Resolved Fluorescence Measurement System  
Raphael Hagen\*, F Spano, M Bonmarin, D Fehr  
ZHAW
- Poster 8 Tissue Oxygenation in Individuals with Spinal Cord Injury: A pilot study  
Tarcisi Cantieni\*, O da Silva-Kress, U Wolf  
University of Bern
- Poster 9 Calibration of a back-scattering polarimetric set-up  
Vladislav Stefanov\*, BP Singh, M Frenz, A Stefanov  
University of Bern
- Poster 10 Towards computational high-speed video reflection microscopy as a new diagnostic tool to quantitatively identify impaired mucociliary activity  
Martin Schneider, J Schori, J Askew, S De Groof, A Stokes, SA Tschanz, P Arnold, L Müller, M Frenz  
University of Bern, Inselspital, BUAS
- Poster 11 Dependence of cerebral oxygenation and task performance on colored light exposure and chronotype: Blue and red do not have the same effects on the prefrontal cortex  
Hamoon Zohdi, F Scholkmann, U Wolf  
University of Bern
- Poster 12 Identification of the optimal PBM conditions to promote angiogenesis  
Jaroslava Joniová, A Gregor, E Gerelli, M Lambelet, S Déglise, F Allagnat G Wagnières  
EPFL, CHUV
- Poster 13 Assessing the retina with pupillometry and silence substitution  
Martial Geiser  
OculoWise

### Registration is required.

Register [here](#) by Dec. 4<sup>th</sup>, 2023. Registration fee is 50Fr. payable in cash on site. Registration is **free** for members of SSOM: **become member for 40Fr./year** [here](#).

For further information about the Biomedical Photonics Network: [www.bmpn.ch](http://www.bmpn.ch).

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