



Introduction to the Biophotonics Congress 2022 feature issue

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Abstract: A feature issue is being presented by a team of guest editors containing papers based on studies presented at the Optica Biophotonics Congress: Biomedical Optics held on April 24–27, 2022 in Fort Lauderdale, Florida, USA.

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Introduction

In April of this year, the biennial Optica Biophotonics Congress: Biomedical Optics meeting returned to a hybrid (remote & in-person) format after it had pivoted to an online format in 2020 at the start of the pandemic. As usual, the size of this congress (with ~300 in-person participants), held at a single beach-front venue, facilitated a high degree of networking and engagement by all participants. As a peer-reviewed conference, the invited and contributed presentations were of high quality, including the poster sessions that served as an attractive forum for all attendees to interact.

The 2022 Optica Biophotonics Congress: Biomedical Optics was led by two congress chairs: Dr. Christine Hendon (USA) and Dr. Rainer Leitgeb (Austria). The Congress showcased five conference tracks: (1) Clinical and Translational Biophotonics, chaired by Dr. Daniel Elson (UK) and Dr. James Tunnell (USA); (2) Microscopy, Histopathology, and Analytics, chaired by Dr. Anna Yaroslavsky (USA) and Dr. Jonathan Liu (USA); (3) Optical Coherence Tomography, chaired by Dr. Kostadinka Bizheva (Canada) and Dr. Christoph Hitzenberger (Austria); (4) Optical Tomography and Spectroscopy, chaired by Dr. Jana Kainerstorfer (USA) and Dr. Amir Rosenthal (Israel); and (5) Optics and the Brain, chaired by Dr. Pablo Blinder (Israel) and Dr. Erin Buckley (USA).

In this feature issue of Biomedical Optics Express, a total of 12 papers are being published, representing a subset of the diverse studies presented at the 2022 Biophotonics Congress: Biomedical Optics [1–12]. The largest number of papers came from the Optical Tomography and Spectroscopy conference, likely reflecting the rapid advancements being made in that area. We wish to thank all who submitted their manuscripts to this special issue and who participated

in the Biophotonics Congress. The energy and engagement we experienced was refreshing and inspiring after weathering two years of the pandemic.

We encourage everyone to join us at the next Biophotonics Congress: Optics in the Life Sciences scheduled to take place from April 24–27, 2023 at the Hyatt Regency Vancouver in British Columbia, Canada.

References

1. G. A. Perkins, A. T. Eggebrecht, and H. Dehghani, “Multi-modulated frequency domain high density diffuse optical tomography,” *Biomed. Opt. Express* **13**(10), 5275–5294 (2022).
2. J. B. Majeski, I. A. Dar, and R. Choe, “Co-registered speckle contrast optical tomography and frequency domain-diffuse optical tomography for imaging of the fifth metatarsal,” *Biomed. Opt. Express* **13**(10), 5358–5376 (2022).
3. F. Nouizi, H. Erkol, D. Nikkhah, T. C. Kwong, and G. Gulsen, “Development of a preclinical CCD-based temperature modulated fluorescence tomography platform,” *Biomed. Opt. Express* **13**(11), 5740–5752 (2022).
4. N. Zhang, Q. Zhang, and A. Nurmikko, “Sub-mm resolution tomographic imaging in turbid media by an ultra-high density multichannel approach,” *Biomed. Opt. Express* **13**(11), 5926–5936 (2022).
5. F. Nouizi, J. Brooks, D. M. Zuro, S. K. Hui, and G. Gulsen, “Development of a theranostic preclinical fluorescence molecular tomography/cone beam CT-guided irradiator platform,” *Biomed. Opt. Express* **13**(11), 6100–6112 (2022).
6. A. Muldoon, A. Kabeer, J. Cormier, M. A. Saksena, Q. Fang, S. A. Carp, and B. Deng, “Method to improve the localization accuracy and contrast recovery of lesions in separately acquired X-ray and diffuse optical tomographic breast imaging,” *Biomed. Opt. Express* **13**(10), 5295–5310 (2022).
7. J. Park, B. Park, J. Ahn, D. Kim, J. Y. Kim, H. H. Kim, and C. Kim, “Opto-ultrasound biosensor for wearable and mobile devices: realization with a transparent ultrasound transducer,” *Biomed. Opt. Express* **13**(9), 4684–4692 (2022).
8. G. Regnault, M. A. Kirby, M. Kuriakose, T. Shen, R. K. Wang, M. O’Donnell, and I. Pelivanov, “Spatial resolution in optical coherence elastography of bounded media,” *Biomed. Opt. Express* **13**(9), 4851–4869 (2022).
9. R. Paul, K. Murali, and H. M. Varma, “High-density diffuse correlation tomography with enhanced depth localization and minimal surface artefacts,” *Biomed. Opt. Express* **13**(11), 6081–6099 (2022).
10. K. G. Akhmedzhanova, A. A. Kurnikov, D. A. Khochenkov, Y. A. Khochenkova, A. M. Glyavina, V. V. Kazakov, A. V. Yuditsev, A. V. Maslennikova, I. V. Turchin, P. V. Subochev, and A. G. Orlova, “In vivo monitoring of vascularization and oxygenation of tumor xenografts using optoacoustic microscopy and diffuse optical spectroscopy,” *Biomed. Opt. Express* **13**(11), 5695–5708 (2022).
11. T. Shan, H. Yang, S. Jiang, and H. Jiang, “Monitoring neonatal brain hemorrhage progression by photoacoustic tomography,” *Biomed. Opt. Express* **14**, 118–127 (2023).
12. M. Helton, S. Rajasekhar, S. Zerafa, K. Vishwanath, and M.-A. Mycek, “Numerical approach to quantify depth-dependent blood flow changes in real-time using the diffusion equation with continuous-wave and time-domain diffuse correlation spectroscopy,” *Biomed. Opt. Express* **14**, 367–384 (2023).