

# PROCEEDINGS OF SPIE

## ***Biophotonics: Photonic Solutions for Better Health Care V***

**Jürgen Popp**  
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*Editors*

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- 20 Neurophotonics  
**Oxana V. Semyachkina-Glushkovskaya**, N.G. Chernyshevsky Saratov  
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- 21 Tissue Diagnostics  
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# Introduction

## Biophotonics: Photonic Solutions for Better Health Care

The research area of biophotonics provides novel photonic technologies and tools for medical diagnosis and therapy. Its solutions for efficient and affordable health care help deal with the challenges of aging societies and exploding health-care costs. Furthermore, biophotonics research aims for a deeper understanding of the processes within living cells, which is a prerequisite for the improvement of early recognition and targeted treatment of diseases.

The importance of biophotonics is obvious not only from the impressive annual growth rates of the related industries, but also from the significant amount of research funding in this field. The highly interdisciplinary character of this field of research requires an intensive dialogue between scientists from the various disciplines in order to align, promote and amplify their efforts. The connection between technology and method developers and the biomedical endusers still needs further improvement as biophotonic solutions can only effectively reach the clinics when they are tailored according to the biomedical needs. To spread and promote this way of thinking is one of the major aims of the conference. Accordingly, the conference featured eight talks from selected and invited medical doctors and biomedical endusers from a number of specialties, such as neurobiology and brain physiology, sepsis, skin, pathology, otolaryngology and gastroenterology. Overall, the conference included more than 30 invited papers, which were not promoted contributed papers, but carefully selected contributions from Biophotonics luminaries from all over the world. Together with the 70 contributed talks and the 25 posters, the overall number of contributions amounted to 95, making the Biophotonics subconference the second largest subconference, almost on par with the Nanophotonics subconference. The topics included "Photonics and Nanobiophotonics for Analysis and Diagnosis", "New Photonic Nanomanipulation Tools" and "Biomedical Optics in and towards Clinical Routine". A broader notion of health includes the environment, as well as the quality of food and pharmaceutical products as its determining factors; thus, the conference covered applications of light in these areas as well.

A majority of the presenters of the Biophotonics subconference submitted manuscripts that can be found on the subsequent pages. We hope that these manuscripts will inspire and stimulate the reader to make her or his own contribution to this exciting and growing field.

While our thoughts and our sympathy were with the victims and their relatives and colleagues, unfortunately, the very sad and incomprehensible events shortly before Photonics Europe also had some unavoidable impact on our

subconference. We thank all participants that made the event nevertheless the success it was!

**Jürgen Popp**  
**Valery V. Tuchin**  
**Dennis L. Matthews**  
**Francesco Saverio Pavone**