

Biophotonics: Photonic Solutions for Better Health Care

Jürgen Popp
Wolfgang Drexler
Valery V. Tuchin
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Editors

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 Kishan Dholakia, University of St. Andrews (United Kingdom)
- 8 Advanced Spectroscopy and Microscopy V
 Olivier Haeberlé, Université de Haute Alsace (France)
- 9 Photonic Therapies
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Introduction

Biophotonics is gaining a lot of attention in the international world of photonics. Dealing with the development of novel optical systems and solutions for medicine and the life sciences, biophotonics is a discipline and a market on the rise, both in the scientific and the economic sense. Market surveys anticipate a worldwide growth by 10 to 30 percent in the coming years. Photonic technologies will probably transform healthcare, just like they have revolutionized communications and data storage during the last 20 years.

Biophotonics sets the trend towards a personalized medicine—by improving diagnosis, therapy, and follow-up care. Its solutions for an efficient and affordable health care help counter the problems of exploding health care costs coming with ageing societies. Furthermore, biophotonics research aims at a deeper understanding of the processes within living cells, which is a prerequisite for the early recognition and targeted treatment of diseases.

But the challenges of this discipline are as big as its chances. Among them, the highly interdisciplinary character of biophotonics is probably the biggest issue. In practice, scientists and technology developers often lack knowledge about users' and patients' needs, just like many physicians and biologists only roughly know about the potential of optical technologies. However, the future scientific and economic success of biophotonics strongly depends on the ability of these experts to bridge this gap.

This has been a major focus of the conference “Biophotonics: Photonic Solutions for Better Health Care”. Not only the latest biophotonics research topics were presented and discussed, but emphasis was likewise put on the question of how to overcome the gap between such different disciplines as physics, chemistry, engineering, biology, and medicine which are all strongly related to biophotonics. The approach to invite papers from a variety of subdisciplines and to actually have experts from different fields talk to each other turned out to be very successful.

We believe the conference has contributed vital cooperation within the world of biophotonics, and has underlined the growing importance of biophotonics research for the future. We are anticipating further fruitful dialogues.

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Wolfgang Drexler
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