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Adaptive Optics and Wavefront Control for Biological Systems III

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1 Wavefront Shaping Devices
Thomas G. Bifano, Boston University (United States)

Introduction

Adaptive optics and wavefront control have greatly expanded the capability of optical microscopy and measurements in biological systems. Recent breakthroughs in measuring and controlling high-order optical wavefront have led to many important applications, including deep tissue microscopy with improved imaging quality and depth, optical tweezers with sophisticated shape and momentum distribution, and three-dimensionally patterned optogenetic excitation. This conference includes contributions from leading experts in a variety of research fields that employ innovative adaptive optics for biomedical applications including optical coherence tomography (OCT) in ophthalmology, endoscopy, widefield, stimulated emission/depletion (STED) and multiphoton microscopy, and adaptive optics applied to cleared tissue. Contributions in wavefront control technologies include the dynamic performance of MEMS deformable mirrors, liquid crystal devices, and dynamic red blood cells. Finally, applications in wavefront control include focusing light through dynamic diffusive media, reduction of out-of-focus background light and the use of coherent optical adaptive techniques (COATS) for improvement of the spatial resolution in thick samples. We would like to thank all of the authors who contributed to this conference.

Joel Kubby
Thomas Bifano
Silvain Gigan