

# PROCEEDINGS OF SPIE

## ***Active Photonic Materials III***

**Ganapathi S. Subramania  
Stavroula Foteinopoulou**  
*Editors*

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# Introduction

Advanced photonic materials offer a versatile platform to engineer the EM vacuum and control light-matter interactions. These extra-ordinary structures consist of "smartly" arranged metallic, dielectric, metallo-dielectric, or semiconductor building blocks. These artificial materials have provided transformative possibilities in the field of photonics, as they can dramatically divert, confine, focus, and slow down the flow of light. Incorporation of active elements, such as quantum dots and non-linear media, has taken the functionality of such type of photonic materials to the next level and opened up new avenues encompassing a wide range of applications including bio/chemical sensing, thresholdless lasing, on-chip compact integrable sources, as well as optical computing and communications. This vast potential for high impact applications has been a constant driving force in active photonic materials research.

The SPIE Active Photonic Materials III conference brought together scientists and engineers working in different aspects of the field. In this conference, exciting research encapsulating recent theoretical and experimental advances in a wide range of affiliated topics was reported. In particular, current research was presented in a variety of topics including novel lasing and second harmonic generation structures, new prototypes of THz sources and optical isolators, control of thermal radiation, fabrication of quantum dots and active photonic crystals, enhancement and directionality of spontaneous emission, strong coupling and polariton condensates, tunable photonic waveguides, as well as novel chip-scale compact photonic sources. The many engaging presentations in these topics have laid out the present state-of-the-art in the active photonic materials field and provided inspiration for exciting future research.

As conference chairs, we would like to express our sincere thanks to all the participants of the 7756 conference who contributed with their presentations as well as manuscripts to make it a successful and truly interesting program!

**Ganapathi S. Subramania**  
**Stavroula Foteinopoulou**

