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Introduction

Taming light with cleverly structured materials has unleashed unprecedented capabilities that would have been unimaginable a few decades ago; these continually push the boundaries and the performance of a vast range of applications impacting telecommunications, and health and energy management. It is these strong applications potentials that have been a driving force in the field of photonic materials research.

The focus of the Active Photonic Materials VI conference was directed towards new photonic materials or phenomena and their interface with active components, such as tunable, gain or non-linear photonic materials, as well as with quantum emitters. Exploring the interface between new EM phenomena and active components pushes the photonics frontier further to a new class of dynamic electromagnetic phenomena and device platforms that are relevant to a range of current applications of crucial importance such as chipscale optical computing, photodetectors, nanoscale thresholdless lasing, information storage, biological/chemical sensing, solid state lighting, and THz imaging.

This year, in our Active Photonic Materials VI Conference we had two keynote sessions which featured the research of Prof. Sanjeev John and Prof. Eli Yablonovitch—in extreme absorption management and recent progress in this exciting research direction. Moreover, a number of interesting sessions focused on the progress of fabrication and interaction of quantum emitters in a patterned photonic environment and their promise to single-photon control and quantum-information science. Furthermore, many exciting talks presented current advances with new types of photonic materials including low-loss metals, tunable metal oxides, as well as graphene and 2D materials, and carbon nanotubes. The area of harnessing light-matter interaction at the nanoscale for nanolasing was also highlighted with a number of talks, as well as recent advances in slow light physics and devices. Last but not least, many engaging presentations unveiled fascinating new emerging directions in the field reporting on topological protected states, PT symmetric effects, photonic graphene structures, and the photonic Bohm-Aharonov phenomenon.

Active Photonic Materials VI has brought together theorists and experimentalists to exchange state-of-the art results in this rapidly evolving area of research. As conference chairs, we would like to express our sincere thanks to all the participants of the conference who contributed with their presentations as well as manuscripts to make this conference a stimulating and vibrant event.

Ganapathi S. Subramania
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