Preface to Special Issue

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It is an honor to write this prefatory note. I congratulate the authors of the special issue on compiling a set of important topics in photoacoustic imaging. Photoacoustic tomography has evolved to be an exciting technology in biomedicine. As shown in the following chart, the annual conference on photoacoustic tomography has experienced an explosive growth and has become the largest since 2010 at the 20,000-attendee Photonics West. The number of peer-reviewed journal publications has continued to grow as well. This growth is rooted in the unique role of optical contrast in biomedicine as light occupies the only part of the vast electromagnetic spectrum that provides biochemical information.

Photoacoustic tomography broke through the optical di›usion limit（～1 mm）on high-resolution optical imaging penetration by nearly two orders of magnitude, filling an important void in the optical imaging range. Photoacoustic tomography is the only technology that provides in vivo multiscale imaging from subcellular organelles, through cells and tissues, up to human organs or small-animal organisms. This imaging capability is expected to enable holistic studies of fundamental biological problems and accelerate translation of microscopic lab discoveries to macroscopic clinical practice. I have no doubt that photoacoustic tomography will find widespread applications in both preclinical and clinical spaces.