# Photons Plus Ultrasound: Imaging and Sensing

Imaging and sensing based on fusing the compelling features of optical and ultrasonic waves is the fastest growing area of research in biomedical optics. The annual SPIE conference on this topic, co-chaired by both of us, has been doubling in size approximately every three years since 2003 (Fig. 1). As of 2009, this conference has become the largest at SPIE Photonics West. Hybrid modalities such as photoacoustic or optoacoustic tomography can provide deep tissue penetration, high ultrasonic resolution, and speckle-free optical contrast. Applications include *in vivo* functional and molecular imaging of cancer, neurophysiology, and vascular disease in both animals and humans. Major challenges include development of quantitative imaging, improvement of contrast and resolution, and commercialization of the technology. We look forward to seeing significant preclinical and clinical impact from this emerging technology.

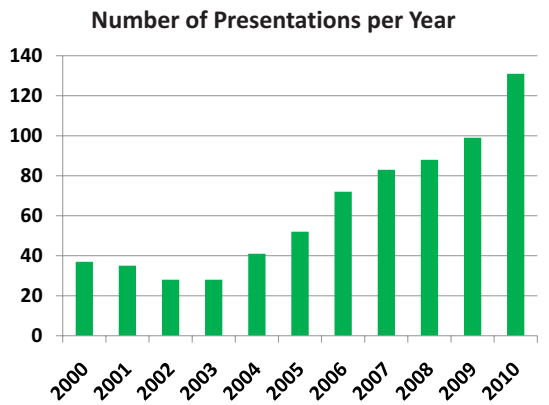


**Fig. 1** Number of presentations per year in the annual conference on Photons plus Ultrasound: Imaging and Sensing.

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**Special Section Guest Editors**



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