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Thomas P. Ryan

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Introduction

Welcome to the proceedings for the 2015 SPIE Conference: Energy-Based Treatment of Tissue and Assessment. This is the 17th year we have held this conference with SPIE. Our first conference was entitled: Surgical Applications of Energy.

This year, we had a variety of papers covering energy-based devices and techniques in medicine. Over 40 presentations were made this year and the publications associated with those talks make up another great *Proceedings of SPIE*. We had a number of papers covering nanoparticles in the treatment of cancer with fabrication, imaging, modeling, cell effects and biodistribution; as well as the effects of external electrical and magnetic fields to activate and, in some cases, provide heat dosing.

There were a number of ablation devices covering RF, microwave, and ultrasound for thermal therapy; including some very novel microwave and ultrasound devices.

For the second time, there was a session on Plasma Medicine and the effects including: bactericide, tissue healing, and tissue ablation (removal), and reshaping with non-thermal surgical technologies. There were also vessel sealing papers that cover models and the use of a valuable surgical technique enabled by recent technology.

As always, we see the evolution of treatment technologies, aided by image guidance, and driven by evidence-based medicine. Several papers covered the effects of nanosecond electrical pulses including bioeffects and shock waves.

Lastly, it was valuable to have companies present their latest technologies and show how surgeons or interventional radiologists could use these devices for the treatment of patients.

Thomas P. Ryan

