

Title: Solid State PET in Radiology and Radiation Oncology: from SiPM to AI in the Clinic

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Content: With the disruptive technology leap of solid state SiPM PET detectors, improvements in PET instrumentation and technologies are happening at a staggering pace. At the same time, rapid development of computational technologies has made artificial intelligence (AI) more feasible and increasingly important. This symposium aims to describe current clinical status and future expectations of utilizing SiPM PET in radiology and radiation oncology patient care, as well as innovative technologies and novel AI features of emerging SiPM PET instrumentation focusing on how digital PET is better than analog PET. Physicists, physicians and technologists wishing to better understand novel PET systems and technologies are expected to attend this symposium.

Learning objectives:

After the completion of this activity, participants will be able to

1. Understand and learn current challenges of clinical care as well as expectations of future improvement using SiPM PET technologies in both radiology and radiation oncology.
2. Learn physics of SiPM PET technologies and specify emerging SiPM PET instrumentations and their novel AI features.
3. Identify and learn the advantages of digital PET than analog PET from imaging acquisition to clinical application.

Topics:

The symposium will be a 60 minutes SAMs session. Lectures will be given by 2 clinical and scientific speakers in related fields.

1. Clinical Considerations of SiPM PET in Radiology and Radiation Oncology: Motivating Applications and Needs. (30min)

Speaker: Stephen R. Bowen, PhD

The lecture will offer an overview of current clinical challenges facing radiology and radiation oncology patient care when utilizing PET in diagnostic or image-guided therapeutic applications. Opportunities for improving clinical care through technological advances in SiPM PET/CT, PET/MR and total body PET across disease sites and radiotracers will be summarized.

2. Technologies and AI Features of SiPM PET Instrumentation: What is available and how is digital PET better than analog PET? (30min)

Speaker: Jun Zhang, PhD

The lecture will update and describe emerging SiPM PET instrumentation and technologies focusing on physics, system performance and novel AI-features across manufactures. Innovation and advantages of digital PET as well as how digital PET will meet clinical needs and applications better than analog PET will be summarized and discussed.