

SF03-S1

09:20-10:05

Room 203

Chairperson(s): **Dong-Guk Paeng** (*Jeju National University, Korea*)  
**Heechul Yoon** (*Dankook University, Korea*)

## Super Resolution Ultrasound Imaging

**Kang Kim**

*Department of Medicine and Bioengineering, University of Pittsburgh, USA*

Super-resolution ultrasound (SRU) imaging is an emerging technology that can visualize microvessels with unprecedented high spatial resolution compared to the conventional contrast enhanced ultrasound imaging methods. For example, when using a typical clinical ultrasound imaging transducer of a few MHz center frequency, a spatial resolution of tens of micrometers (10-6 m) can be achieved. Such high-resolution imaging capability is practically very useful when imaging human subjects for a greater details of microvasculature network, which is of critical importance for many diseases. The pathological process of the microvessels in many organs and tissues have been recognized as a biomarker of the

diseases and their progresses, including kidney, brain, tumors, and atherosclerotic plaques. In this talk, I will introduce a few representative SRU imaging algorithms and discuss their advantages and limitations in their applications including identifying vasa vasorum in atherosclerotic plaques in a high-fat high-cholesterol rabbit atherosclerotic plaque model and assessing microvessel changes in a mouse ischemia-reperfusion kidney injury model under an approved protocol by the institutional animal study board and in human subjects with known chronic kidney diseases under an approved protocol by the institutional human study board.