

# **A General Overview of Histotripsy in Mechanical Tissue Destruction**

**Ki Joo Pahk**

Associate Professor

Department of Biomedical Engineering, Kyung Hee University, Republic of Korea

kjpahk@khu.ac.kr

High Intensity Focused Ultrasound (HIFU) is a non-invasive ultrasound technique which has been used to thermally necrose solid tumours without disruption to surrounding tissue. In recent years, an alternative HIFU technique to thermal ablation has been developed. This is known as mechanical tissue fractionation or histotripsy. Acoustic peak positive and negative pressures at the HIFU focus used in histotripsy are comparable to those in the shockwaves used in lithotripsy for kidney stone fragmentation.

In histotripsy, there are two different methods of creating pure mechanical damage of soft tissue by (a) pulsed ultrasound cavitation (i.e., Cavitation cloud based histotripsy) or (b) shock wave heating and millisecond boiling (i.e., Boiling histotripsy, Pressure-modulated shockwave histotripsy). A well-defined lesion in the form of a cavity can be produced by histotripsy without any significant thermal damage at the periphery of the cavity. In this talk, a general overview of histotripsy will be presented.