

Researchers in Korea develop ultrasound-assisted photothermal therapy technology

25 June 2024 | News

The team assessed the potential clinical application of the 'ULTRA-PTT handpiece' technology



Professor Jin-ho Chang's research team from the Department of Electrical Engineering and Computer Science at Daegu Gyeongbuk Institute of Science and Technology (DGIST), South Korea has developed 'Ultrasound-assisted photothermal therapy (ULTRA-PTT)' technology that significantly enhances the performance of conventional photothermal therapy.

This technology was developed in collaboration with Senior Researcher Hye-min Kim from the Advanced Photonics Research Institute at Gwangju Institute of Science and Technology (GIST) using the team's proprietary 'ultrasound-induced optical clearing' technology.

Phototherapy, using light, is widely used in clinical settings for skin tightening, laser tattoo removal, and laser cancer therapy, since it can selectively improve or destroy targeted lesions. However, as light travels through biological tissues, optical scattering occurs, causing distortion of the light path and limiting the depth of light penetration. Against this backdrop, a fundamental problem of limited depth in light-based treatments arises.

Professor Chang of DGIST said, "This research allowed us to apply and expand the 'ultrasound-induced optical clearing' technology, which our team developed, to light-based therapy devices. Especially, the 'ULTRA-PTT handpiece' demonstrates excellent therapeutic performance in animal experiments, and proved its safety and efficacy through histological analysis, showing the potential for commercialisation of domestically developed proprietary technology."