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국문 강연제목: 의료용 초음파 소자의 일회용 및 착용형 개념

**영문 강연제목: Disposable and Wearable Concept of Medical
Ultrasound Devices**

Abstract(영문): Ultrasound remains a core modality in medical diagnostics and is gaining traction in therapeutic applications. Yet, conventional probes are bulky, rigid, and costly, limiting their use in continuous or long-duration settings. Advances in soft electronics have led to thin, flexible, and stretchable wearable ultrasound devices that overcome these barriers. Among them, wearable CMUT (capacitive micromachined ultrasonic transducer) technologies—integrating soft materials with semiconductor fabrication—enable low-cost, disposable solutions while eliminating toxic lead found in traditional piezoelectric transducers. This talk introduces a novel CMUT patch powered by a silicon nanocolumn architecture, highlighting its structural advantages and clinical adaptability. Key aspects such as device form factor, performance, and disposability are discussed with a focus on scalable, eco-friendly medical implementation.

Brief Biosketch (간단한 이력, 연구/대외활동 소개,국문/영문)

Byung Chul Lee received the B.S. degree (Summa Cum Laude) from Korea University, the M.S. degree from Korea Advanced Institute of Science and Technology (KAIST), and the Ph.D. degree from Stanford University, all in electrical engineering, in 2003, 2005, and 2015, respectively. His research interests include MEMS/NEMS technology for diverse biomedical applications such as bioelectronics, biosensors, micro-nanofabrications, and novel micromachined ultrasonic transducers and their integrated systems. He was awarded the Presidential Citation, the Minister of Science and ICT Award, and the NST Chairman Award all in 2025.