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(국문/영문)강연제목: 3 차원 뇌세포 분석을 위한 3D MEA/플랫폼 연구 / 3D MEA platforms for of 3D brain tissues analysis

Abstract(영문):

Recently developed methods for transforming 2D patterns of thin-film materials into 3D mesostructures create many interesting opportunities in microsystems design. A growing area of interest is in multifunctional thermal, electrical, chemical, and optical interfaces to biological tissues, particularly 3D multicellular, millimeter-scale constructs, such as spheroids, assembloids, and organoids. Herein, examples of 3D mechanical interfaces are presented, in which thin ribbons of parylene-C form the basis of transparent, highly compliant frameworks that can be reversibly opened and closed to capture, envelop, and mechanically restrain fragile 3D tissues in a gentle, nondestructive manner, for precise measurements of viscoelastic properties using techniques in nanoindentation. Studies of cerebral organoids by nanoindentation show effective Young's moduli in the range from 1.5 to 2.5 kPa depending on the age of the organoid. This collection of results suggests broad utility of compliant 3D mesostructures in noninvasive mechanical measurements of millimeter-scale, soft biological tissues.

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

Dr. Hanjun Ryu is currently an assistant professor in the department of advanced materials engineering at Chung-Ang University since 2022. He received his B.S. and Ph.D. from Sungkyunkwan University in the department of advanced materials science and engineering, majoring in nanogenerators. Since then he moved to Evanston, IL, and had postdoc training under Dr. John A. Rogers at Querrey Simpson Institute for Bioelectronics (QSIB) at Northwestern

University. He focused on 3D multi-electrode array (MEA) for brain organoid and transient electro-therapy during his postdoc period.