

세미나 초록

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발표 주제	Molecular Self-Assembly for Advanced Drug Nanoengineering
발표 내용	<p>Supramolecular assemblies formed through non-covalent interactions are central to many biological processes, owing to their dynamic, adaptive, and hierarchically organized structures. In this work, I explore how subtle changes in molecular design govern the self-assembly behavior of these systems and, in turn, their performance in advanced drug nanoengineering. The spatial arrangement and organization of supramolecular building blocks critically shape efficiency and specificity in applications such as drug delivery, molecular recognition, and fluorescence imaging. I highlight recent efforts to construct functional nanostructures with tailored biological roles, including tamoxifen-selective fluorescent assemblies, 2D peptide sheets, nanostructures that enhance cGAMP stability, membrane-to-vesicle transformations, and controlled sorafenib assemblies enabling improved therapeutic regulation. Collectively, these studies show that even minimal structural modifications within supramolecular components can induce pronounced shifts in morphology and bioactivity, highlighting the importance of precise molecular design in engineering self-assembled nanoplatforms for therapeutic and diagnostic applications.</p>