

2026

PSK-이녹스 신진연구자 웨비나

2026년 10월 14일(수) AM 10:00 - 12:00 | 온라인 상

<https://jnu-ac-kr.zoom.us/j/87287466105>

주최 한국고분자학회

주관 의료용 고분자 부문위원회

후원 INNOX

○ 초대의 글

'PSK-이녹스 신진연구자 웨비나'는 우수한 연구역량을 가진 신진연구자를 발굴하여 교류의 장을 넓히고자 (주)이녹스의 후원과 한국고분자학회 주최로 마련한 온라인 세미나입니다. 이번 세미나에서는 나노공학 기반 면역조절 및 정밀 진단·치료 분야에서 선도연구를 수행하는 신진연구자의 우수한 연구성과를 공유하는 자리를 마련하였으니 관심있는 분들의 많은 참여 부탁드립니다.

○ 일정

AM 10:00 - 11:00

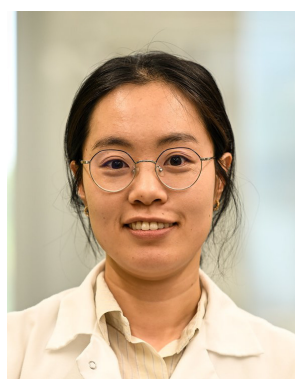
Engineered Lipid Nanoparticles for Low-lytic Endosomal Escape and Efficient mRNA Delivery

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ABSTRACT: Lipid nanoparticles (LNPs) have enabled clinical mRNA vaccination, but their performance is limited by endosomal escape mechanisms that trigger pro-inflammatory responses, suppress mRNA translation, and contribute to reactogenicity. Inspired by viral mimicry strategies that permit immunologically silent entry, we developed a surface-engineered LNP that engages an endogenous recognition pathway to achieve efficient mRNA delivery to dendritic cells with reduced inflammatory escape toxicity. Through structural, biophysical, and immunologic analyses, we show that the engineered LNP enhances uptake and supports a low-lytic, productive mode of endosomal escape that preserves mRNA expression and limits reactogenicity. This platform biases CD8⁺ T-cell differentiation toward memory-precursor states in vivo and improves antitumor vaccine responses. Together, these findings reveal a new design principle for "immunologically intelligent" nanoparticles that achieve efficient mRNA expression while minimizing inflammatory toxicity.

AM 11:00 - 12:00

Programming Precision Theranostics through Peptide Self-Assembly

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ABSTRACT: Precision theranostics is critical for maximizing therapeutic efficacy while minimizing off-target effects. In this context, imaging-guided drug delivery is particularly attractive, as it can integrate disease detection and treatment while enabling assessment of carrier biodistribution, target-site accumulation, and therapeutic response. In this talk, I will present peptide self-assembly as a versatile platform for precision theranostics, through which unique and emergent functional properties can be generated. First, I will discuss fundamental peptide self-assembly and its development into functional peptide nanomaterials. I will introduce how molecular design and self-assembly can be used to generate peptide nanostructures with diagnostic and therapeutic functions. I will then focus on the extension of these design principles to peptide-stabilized nanoemulsions, in which interfacial peptide assembly enables additional functionality and broadens their potential for theranostic applications, particularly for ultrasound imaging. Finally, I will highlight phase-changing peptide nanoemulsions that enable ultrasound-based detection and therapeutic intervention, with applications ranging from atherosclerosis imaging and treatment to macrophage-targeted immunomodulatory drug delivery.



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The Polymer Society of Korea