# 2025 PSK-이녹스 신진연구자 웨비나

**2025년 9월 12일(금) AM 10:30 - 11:30 | 온라인 상**

https://kaist.zoom.us/j/87635018769

**주최** 한국고분자학회 **주관** 콜로이드 및 분자조립 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 고분자 분야 중에서도 특히 콜로이드 및 자기조립소재를 이용하여 선도연구를 수행하는 신진연구자의 우수한 연구성과를 공유하는 자리를 마련하였으니 관심있는 분들의 많은 참여 부탁드립니다.

## ○ 일정

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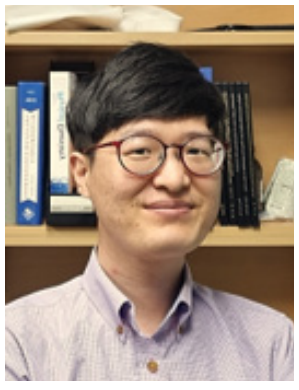
| AM 10:30 - 11:30 | Lightweight Reusable Energy-absorbing Mesoscale Structures by Combined 3D Printing and Polymerization-induced Phase Separation<br>Dongwon Kang (강동원), strongtuna@snu.ac.kr<br>Seoul National University |



ABSTRACT: Conventional energy-absorbing materials often face critical limitations—such as permanent deformation, high dead weight, limited recoverability, or complex fabrication—which hinder their effectiveness in applications that require repeated mechanical impact absorption. To overcome these challenges, we developed a novel hybrid material system, termed Elasticity-Assisted Self-healing Elastomer (EASE), designed to combine high energy absorption capacity with excellent recoverability and reusability. The EASE system consists of glassy epoxy domains dispersed within a rubbery polyurethane acrylate matrix, in which the epoxy domains absorb impact energy through fracture while the elastic matrix enables structural recovery and facilitates self-healing. This unique phase morphology is achieved through the combination of polymerization-induced phase separation (PIPS) and digital light processing (DLP)-based 3D printing, allowing precise control over both microstructure and macroscopic lattice architecture. Energy-absorbing materials fabricated from EASE withstood compressive strains (>60%) and demonstrated full recovery of stress–strain response and energy absorption capacity (~1.77 kJ/kg), even under deformations approaching the densification limits. These findings demonstrate the potential of the EASE material system as an ideal reusable energy-absorbing material.

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