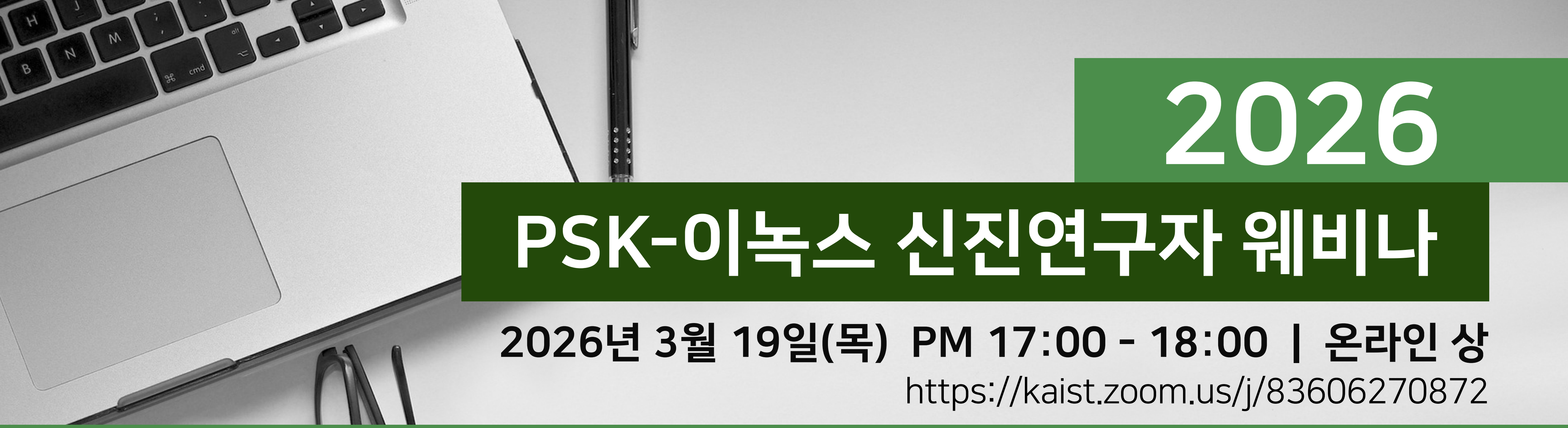

2026

PSK-이녹스 신진연구자 웨비나

2026년 3월 19일(목) PM 17:00 - 18:00 | 온라인 상
https://kaist.zoom.us/j/83606270872

주 최 한국고분자학회 **주 관** 에코소재 부문위원회 **후 원** 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 에코소재를 이용하여 선도연구를 수행하는 신진연구자의 우수한 연구성과를 공유하는 자리를 마련하였으니 관심있는 분들의 많은 참여 부탁드립니다.

일정

PM 17:00 - 17:30	Chemical recycling of polymers made by controlled and free radical polymerization Hyun Suk Wang (왕현석), hyunsuk.wang@mat.ethz.ch ETH Zurich, Department of Materials
	ABSTRACT: The depolymerization of vinyl polymers (all-carbon backbone) is a promising approach to advance chemical recycling. However, conventional approaches involve extreme temperatures (typically >400 ℃), leading to high energy consumption and side reactions. Here, we demonstrate a low-temperature approach for (1) the uncontrolled and controlled depolymerizations of polymethacrylates synthesized by reversible addition-fragmentation chain-transfer (RAFT) polymerization and (2) the depolymerization of commercial polymethacrylates (e.g. Plexiglas). These strategies not only enable mild chemical recycling but also offer valuable insight into polymer characterization.
PM 17:30 - 18:00	Direct Polymer-on-Polymer Grafting of Polyolefins under Visible Light Hongsik Kim (김홍식), hongsik.kim@mat.ethz.ch ETH Zurich, Department of Materials
	ABSTRACT: Polyolefins are the most widely produced plastics, yet their chemical inertness makes recycling and functional upcycling highly challenging. Conventional radical grafting strategies rely on dense installation of small polar groups, which often disrupt crystalline lamellae and compromise mechanical strength. We hypothesized that this trade-off is not inevitable if functionalization occurs through a sparse grafting architecture. Here, we present a visible-light-driven radical platform that enables direct polymer-on-polymer grafting of diverse vinyl polymers onto polyolefin backbones without catalysts, initiators, or pre-functionalization. By precisely regulating radical flux under homogeneous conditions, the reaction favors intrinsically sparse yet extended polymer grafts rather than dense substitution. This architecture introduces substantial polarity while preserving crystalline structure and bulk integrity. The method is applicable to polyethylene, polypropylene, and post-consumer plastic waste, and is scalable to multi-gram quantities. The resulting materials retain high crystallinity, thermal stability, and mechanical robustness. Importantly, sparse polymer grafting translates into exceptional interfacial performance, delivering shear adhesion strengths up to 13 MPa on metal substrates, surpassing commercial hot-melt adhesives. This work establishes sparse polymer grafting as a general strategy for transforming inert commodity polyolefins into high-performance materials.

한국고분자학회
The Polymer Society of Korea