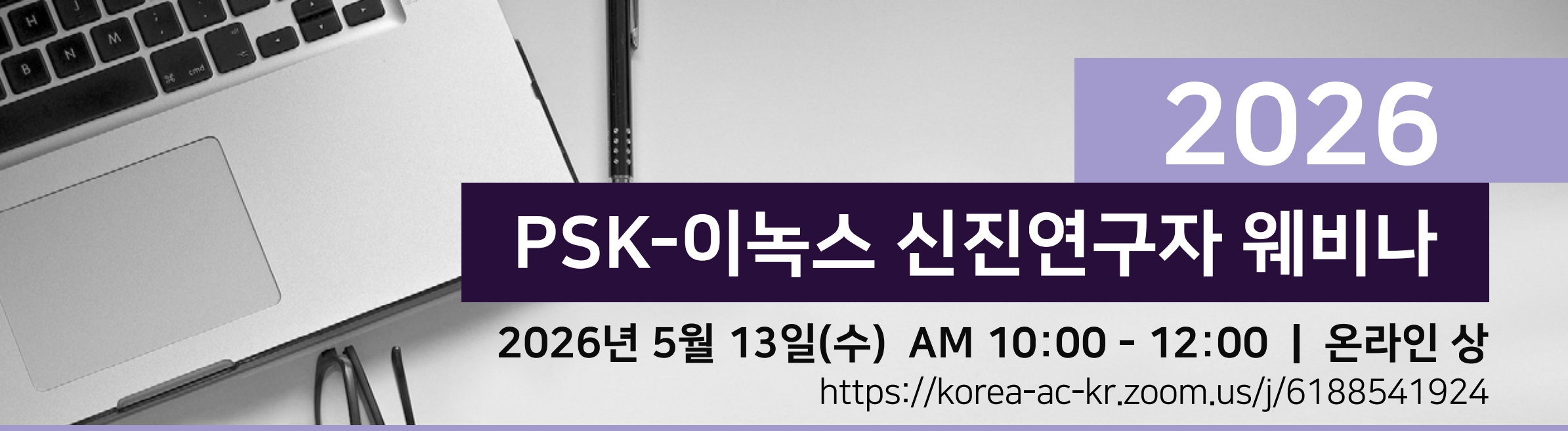

2026

PSK-이녹스 신진연구자 웨비나

2026년 5월 13일(수) AM 10:00 - 12:00 | 온라인 상

https://korea-ac-kr.zoom.us/j/6188541924

주최 한국고분자학회 **주관** 분자전자 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 분자전자 소재 및 소자를 이용하여 선도연구를 수행하는 신진연구자의 우수한 연구성과를 공유하는 자리를 마련하였으니 관심있는 분들의 많은 참여 부탁드립니다.

○ 일정

AM 10:00 - 11:00	Soft Materials and Devices for Mechanical Sensing Jeng-Hun Lee(이정훈), jhmlee@gatech.edu School of Electrical and Computer Engineering, Georgia Institute of Technology
	ABSTRACT: Mechanical cues are ubiquitous, often beyond our awareness—from molecular thermal motion manifested as temperature to macroscopic interactions involving strain, pressure, and vibration. They carry rich information that holds enormous potential for healthcare, humanoid robotics, human-computer interaction (HCI), and extended reality (XR), yet capturing them accurately across complex, dynamic surfaces remains difficult with conventional rigid, bulky sensors. To overcome this limitation, soft materials and devices have emerged as a compelling solution, as their mechanical compliance enables conformal interfacing with deformable surfaces, minimizing interfacial mismatch and allowing accurate transduction of subtle mechanical signals. This seminar will explore how soft materials and devices can be tailored for effective mechanical sensing, addressing two key challenges: decoupling multiple physical cues, and extending sensing into the high-frequency dynamic regime. Together, these discussions aim to chart a path toward soft sensing systems capable of capturing the full richness of the mechanical world with high fidelity and versatility.
AM 11:00 - 12:00	Active and Passive Radiative Thermoregulation Using n-Doped Transparent Organic Conductors for Energy-Efficient Buildings and Vehicles Won-June Lee(이원준), lee4458@purdue.edu Department of Chemistry, Purdue University
	ABSTRACT: Achieving energy efficiency in buildings and vehicles requires effective thermal management to minimize heating, ventilation, and air conditioning (HVAC) demands. Here, we introduce an n-doped poly(benzodifurandione) (n-PBDF), a solution-processable transparent organic conductor with exceptional electron-ion conductivity and extensive conjugated backbones, as a versatile platform for both active and passive radiative thermoregulation. First, we demonstrate active black electrochromic (EC) windows. By engineering a ternary-solvent ink, we achieved uniform, large-area spray coating under ambient conditions without additives. The resulting n-PBDF EC electrodes exhibit deep-black coloration with excellent color neutrality, rapid switching speeds (< 2 s), and unprecedented weathering durability against prolonged exposure to light, heat, and humidity. Furthermore, large-area EC devices showed spatially uniform switching dynamics with remarkable cycling stability over 20,000 cycles. Next, by extending this scalable solution-processable ink formulation, we demonstrate passive low-emissivity (low-e) colored paints. By applying the highly visible-transparent n-PBDF directly atop commercial paints, we achieved a low thermal emissivity of 0.19 in the mid-infrared (MIR) spectrum while fully preserving the underlying aesthetic colors. To validate the practical impact, we conducted building energy simulations using EnergyPlus. The results consistently demonstrate that both the active black EC windows and the passive low-e coatings provide significant HVAC energy savings for mid-rise buildings across diverse climates. Together, these scalable approaches highlight the potential of n-PBDF as a unified material strategy for energy-efficient building envelopes and automotive applications.

한국고분자학회
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