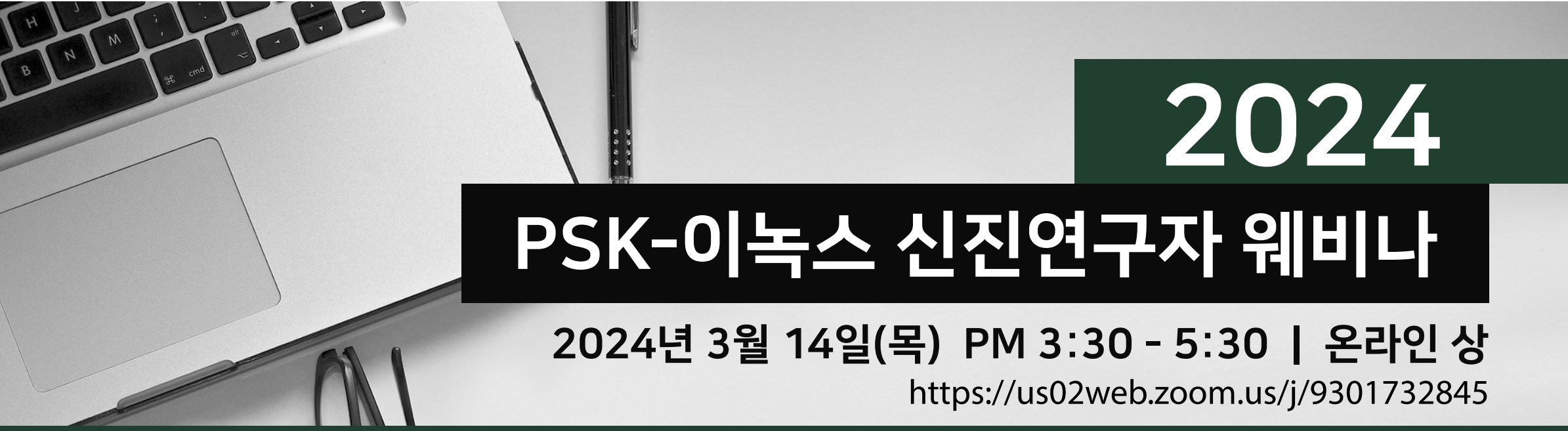

2024 PSK-이녹스 신진연구자 웨비나

2024년 3월 14일(목) PM 3:30 - 5:30 | 온라인 상

https://us02web.zoom.us/j/9301732845

주최 한국고분자학회 주관 에코소재 부문위원회 후원 INNOX

○ 초대의 글

'PSK-이녹스 신진연구자 세미나'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 3:30 - 4:30	Switching to Sustainable Microbeads from Non-degradable Microplastics for Cosmetic Application Sungbin Ju (주성빈), sungbin@krict.re.kr Research Center for bio-based chemistry, Korea Research Institute of Chemical Technology (KRICT)
	ABSTRACT : Up to now, microplastics made from petroleum-based polymers, mainly cause environmental issue due to slow decomposition in nature and absorb persistent organic pollutants (POPs) which show harmful affect to marine animals. Microplastic is a piece of plastic with a diameter of 5 mm or less, and can be classified according to the preparation method. The ban on plastic microbeads in personal care products has led researchers to seek sustainable alternatives. However, current biodegradable microbeads often lack competitive qualities, such as mechanical properties, stability, and non-toxicity of their degraded products. Herein, we synthesized chitin microparticle that meet these requirements and evaluated their practical use, biodegradability, and phytotoxicity. The microparticle has uniform spherical microbeads were produced by surface modification of chitosan, a renewable polymer from crustacean waste, using an inverse emulsion system. Chitosan particle exhibit higher cleansing efficiency than conventional polyethylene microbeads and were completely degraded in soil without any toxicity to the model plants. This alternative can be used as a competitive and environmentally friendly option for microparticles in sustainable daily products.
PM 4:30 - 5:30	Synthesis and Characterization of Sustainable Hemisilicone Materials Taejun Eom (엄태준), taejuneom@kumoh.ac.kr Department of Polymer Science and Engineering, Kumoh National Institute of Technology
	ABSTRACT : Silicones are high-value polymer materials that feature an inorganic backbone Si-O bonds that exhibit distinct properties such as low glass transition temperature, high optical transparency, low surface tension, and good biocompatibility. Due to these characteristics, silicones are used in a broad range of applications such as coatings, photolithography, microfluidics, electronics, and biomedicine. For widely utilized silicone materials, notably polydimethylsiloxane (PDMS), the disposal options are typically limited to landfill waste or incineration. PDMS was able to de-polymerize under high temperature and base catalyst to form cyclic siloxane units (D4, D5, and D6), which are insufficient monomers for the anionic ring-opening polymerization (AROP) of well-defined PDMS due to their ring-strains. Therefore, we need a practical and simple method to recycle silicone materials. In this concept, we have designed a novel silicone material for recycling based on the new type of cyclic monomer (2,2,5,5-tetramethyl-2,5-disila-1-oxacyclopentane (TMOSC)). TMOSC can be simply polymerized via AROP and produce hemisilicone (PTMOSC) containing Si-O with ethylene moiety. Furthermore, employing the same conditions as PDMS, high temperature de-polymerization with a base catalyst enabled the creation of fully recyclable silicon materials. In this presentation, we will discuss about our efforts in synthesizing and recycling the method of hemisilicone and compare it with PDMS material.

한국고분자학회
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