

九州大学 先導物質化学研究所 講演会

2014年1月9日 (木) 15:00-16:30
箱崎地区先導研会議室 (旧工学部3号館114会議室)

Photo-assisted surface control of polymer films for cell engineering

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Surface properties of conjugated polymer films could be tuned by photoreaction of unsaturated bonds of the polymer. Such patterning approaches have greatly profited as a direct photopatterning method rendering cell adhesive surface. Patterns of human bone marrow-derived mesenchymal stem cells (MSCs) were produced through the photo-assisted surface engineering of polymer coated cell culture substrates, which has promoted new insights into the factors that control cell adhesion to polymer surfaces, cell proliferation, differentiation. On the other hands, by controlling the NIR absorption of a conjugated polymer film, the proliferation and harvesting of MSCs on the surface were controlled quantitatively. This light-induced cell detachment method based on polymer films provides the temporal and spatial control of cell harvesting, as well as cell patterning. The harvested MSCs by this method preserved their intrinsic characteristics as well as multilineage differentiation capacities.

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Prof. Eunyoung Kim received her BS degree in chemistry from Yonsei University in Seoul (Korea) in 1982, a master's degree in chemistry from Seoul National University in Seoul in 1984, and PhD in chemistry from University of Houston in 1990. She worked for Korea Research Institute of Chemical Technology in Daejeon (KRICT) from 1992 to 2004. Since 2004, she has been a professor of chemical engineering at Yonsei University, Seoul, Korea. Her work has primarily focused on the development of functional polymers including chromogenic polymers (photochromic and electrochromic), photopolymers, bio-engineering polymers and charge transport issues in organic electronics.



She received more than ten awards, including "The Women Scientist of The Year", 2001, by the ministry of science and technology of Korea (MOST) for her excellence in scientific and engineering achievements, and the AMOREPACIFIC Award for Outstanding Women in the Sciences (Grand award) in 2009. She has been the director of the Active Polymer Center for Pattern Integration (APCPI), an engineering center of excellence in Korea, since 2007 and the Pioneer Research Center for Human Energy Transduction, since 2012.

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