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Polymer matrices with functional gradients in tissue engineering

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The many biological processes in the body are mediated by physical or biochemical signal gradients. There are many kinds of signal gradients in the body, including chemotaxis, heptotaxis, and mechanotaxis. These signal gradients induce the differentiation of stem cells to specific target cells and thus can regenerate target tissues or organs. So, if we can control these physical or biochemical signals and their gradients, we may be able to have more control cell behaviors and enhance tissue formation. We have tried to fabricate various 2D and 3D physical and biochemical gradients for differentiation of stem cells to regenerate target tissues. Among the polymer matrices with these signal gradients, pore size, stiffness, and growth factor gradients to control stem cell differentiations and target tissue regeneration will be discussed in this presentation.

Biography

Jin Ho Lee has completed his graduation in the Department of Materials Science and Engineering at University of Utah, USA with PhD degree in 1988. Since 1993, he is a Professor in the Department of Advanced Materials, Hannam University, South Korea. He was a President of Korean Tissue Engineering and Regenerative Medicine Society (KTERMS) (2012) and served as Conference Chair in Asia-Pacific Meeting of Tissue Engineering and Regenerative Medicine International Societies (TERMIS-AP) (2014). His research area includes biomaterials for tissue engineering and bioactive molecules delivery. He published more than 220 scientific research papers, 35 book chapters, and 55 patents.

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