

3 Dimensional Prints (3DP) of Artificial Cell Structures

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Abstract

Nano bio innovation studies on iPS cell, ES cell, DNA and miRNA are highly focused to clear pathogenic mechanisms and develop personalized medicines. On the other hand, 3D organ is required for donor shortage problem. To fabricate 3D organ, printing technology is suitable because 3D structures will be fabricated by repeatable print, and position of cells and biomaterials is easy to control by 3D image data. Electrostatic patterning (electrostatic inkjet, electrospray, and electro spinning) is highly focused. Electrostatic patterning has good merit that is possible to eject highly viscous liquid. Electrostatic inkjet has another merit that is high resolution to print. These characteristics are suitable to fabricate precision 3D cell structures. Electrospray and electro

spinning are suitable to fabricate scaffolds and extracellular matrix (ECM) those are composed of biomaterials. In this presentation, I would like to introduce products fabricated by electrostatic patterning.

Author Biography

UMEZU, Shinjiro received the BE (2001), MS (2003) and Ph.D (2006) degrees in Mechanical Engineering from Waseda University. He was a research associate at Waseda University since 2003 to 2007. He was a special postdoctoral researcher at Riken since 2007 to 2009. He is now Jr. Associate Professor at Tokai University. He was awarded many times. His research interests include imaging technology and biomechanical fabrication utilizing inkjet technology.