

Electrospun Nanofiber/Hydrogel Composite Scaffolds for Cellular and Viral Delivery

_____, 1, 1, 1, 2, 1,*
 ; 1 ;
 2

Electrospinning has been shown as a versatile and efficient way to fabricate the nanofibrous structures. Although it has many advantages to be used in tissue engineering applications, to be used in actual medicinal practice, electrospun scaffolds have a critical disadvantage: they can only be fabricated into two-dimensional sheet-like shapes with small pore size. Based on previous study investigating 3D moldable nanofibrous scaffolds, lubricating hydrogels and clay-like electrospun nanofibrous scaffolds were combined to fabricate the injectable electrospun scaffolds. The injectable scaffolds were able to be injected through the syringe and the fibrous structure and hydrogels were intact after injection. Thus, injected and aligned nanofibrous structure provided physical guidance for three dimensional and directional growth of the cells and injectability of the scaffolds is safe and patient-friendly. Nanofibrous scaffolds which can be injected through injection have a great potential to be employed as advanced tissue engineering scaffolds carrying and delivering cells and soluble factors.