Abstract

Within the last few years, there has been an explosive growth in published reports on the use of electrospinning as a method of generating functional scaffolds intended for biomedical applications. Specific advantages of electrospun scaffolds (high surface-to-volume ratio, controlled porosity, and flexibility to conform to a wide variety of sizes and shapes) make them superior to scaffolds generated by most other techniques. In addition, electrospun scaffold composition and fabrication can also be used to design explicit utility and functionality of scaffolds. Even after fabrication, the physical properties of scaffolds can further be altered to closely match those of native tissues. Collectively, these advantages are reflected in the wide diversity of scaffolds generated with the intended purposes of delivering cells, as well as bioactive agents including drugs, proteins and DNA. In this talk, we outline the current state-of-art fabrication of nanofibrous scaffolds by electrospinning and electro-blowing technologies, as well as describe recent advances made in the production, in vitro and in vivo testing and future potential applications of electrospun scaffolds in biomedical applications such as prevention of surgery-induced adhesion and tissue engineering.