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Electrospraying an enabling technology for pharmaceutical and biomedical applications: A review

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ABSTRACT

Electrospraying (ES) is a robust and versatile technique for the fabrication of micro- and nanoparticulate materials of various compositions, morphologies, shapes, textures and sizes. The physics of ES provides a great degree of flexibility towards the materials design of choice with desired physicochemical and biological properties. Not surprising, this technology has become an important tool for the production of micro- and nanostructured materials, especially in the pharmaceutical and biomedical arena. In this review, a basic introduction to the fundamentals of ES along with a brief description of the experimental parameters that can be manipulated to obtain micro- and nanostructured materials of desired composition, size, and configuration are outlined. A greater focus of this review is to bring to light the broad range of electrosprayed materials and their applications in drug delivery, biomedical imaging, implant coating, tissue engineering, and sensing. Taken together, this review will provide an appreciation of this unique technology, which can be used to fabricate micro- and nanostructured materials with tremendous applications in the pharmaceutical and biomedical fields.

Keywords: Electrospray, Microparticles, Nanoparticles, Pharmaceutical, Biomedical

1. Introduction - Fundamentals of electrospraying (ES)

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