Special Issue

Recent Advances in Microneedle-Mediated Drug Delivery, 2nd Edition

Message from the Guest Editors

Microneedles (MNs) have become new generation of topical delivery systems, which are revolutionizing the landscape of transdermal drug delivery. In general, MNs are micrometer-sized needles arranged orderly on a base, and their lengths usually range from 25 to 2000 μm. Research has proved that MNs can penetrate the stratum corneum and create an array of temporary microchannels in the skin, which can significantly increase transdermal drug permeation. In addition, MNs are designed to penetrate into the viable epidermis and upper dermis, to avoid contact with the nerve fibers and blood vessels that reside primarily in the deep dermal layer, resulting in minimal pain and invasiveness. With great patient compliance and efficiency in drug delivery, MNs could offer unlimited potential for the transdermal delivery of various therapeutic agents such as small molecules, biological macromolecules, vaccines, and nanoparticles. This Special Issue deals with all aspects of microneedle-mediated drug-delivery systems including the design, fabrication, and characterization of microneedle formulations, and their use as strategies for the prevention or treatment of medical conditions.

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