

# Nanomaterials for Wound Healing and Tissue Regeneration

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Chapter

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## Abstract

Being the largest organ and the protective shield of the human body, the skin is highly vulnerable to potential injuries. A cascade of biological events initiates after the injury to regenerate and repair the damaged tissue and this process is referred to as wound healing. Wound dressings have been introduced as a temporary protective physical barrier to prevent the invasion of pathogenic microorganisms and to keep the wound from dehydration while facilitating the healing process. In recent times, nanomaterials have emerged as a source for developing highly effective and innovative wound dressings. Particularly, several polymeric nanofibres have shown promising results as scaffolds for skin regeneration while some metal nanoparticles possess intrinsic antibacterial properties thus making them potential candidates for integration into wound dressings. Moreover, encapsulating drugs, biomolecules, and growth factors, within nanocarriers is also offering new treatment modalities, especially for chronic wounds. Therefore, this chapter provides an overview of the recent advances in nanotechnology-assisted wound healing and tissue regeneration and the applicability of nanomaterials in the treatment of chronic and acute wounds.

Keywords

**Nanocarriers, Nanomaterials, Tissue regeneration, Wound dressings, Wound healing**

