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(57) Abstract :
The present disclosure introduces a bio-responsive wound dressing with integrated microchip sensing 100 for advanced wound care, enabling real-time monitoring of healing progress and complications. The invention features a cellulose-based hydrogel matrix 102 to provide a biocompatible and moisture-retentive dressing environment. Miniaturized microchips 104 are embedded within the hydrogel to process data from biosensors, including a ph sensor 106 for detecting acidity or alkalinity changes and a temperature sensor 108 for monitoring wound temperature. A wireless communication module 110 transmits real-time biomarker data to a mobile application 114 for remote monitoring and healthcare provider access. The system is powered by a biocompatible power source 112, ensuring uninterrupted functionality. An integrated alert system 116 notifies healthcare providers of critical wound conditions. Together, these components deliver a novel, efficient, and patient-friendly system for improving wound care outcomes and facilitating timely medical intervention. Reference Fig 1

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