

Self-healing biomaterials for medical applications

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Abstract. Biomaterials are currently applied in increasingly complex areas such as tissue engineering, bioprinting and regenerative medicine. To this end, challenging combinations of biomaterial properties are required which usually cannot be met by conventional biomaterials. Since the early 2000s, several new concepts have been proposed to render biomaterials self-healing in order to improve the functionality of traditional biomaterials in terms of their mechanical, handling and biological properties. This presentation will provide a comprehensive overview of the field of self-healing biomaterials, ranging from self-healing of capsule-filled dental fillers and bone cements, to the self-healing behavior of modern injectable hydrogels used in regenerative medicine. More specifically, the presentation will highlight why self-healing properties of biomaterials are crucial for minimally invasive injection into the human body and achieve successful tissue regeneration.

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