



# Bone substitute biomaterials

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editor

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Monografía

Bone substitute biomaterials are fundamental to the biomedical sector, and have recently benefitted from extensive research and technological advances aimed at minimizing failure rates and reducing the need for further surgery. This book reviews these developments, with a particular focus on the desirable properties for bone substitute materials and their potential to encourage bone repair and regeneration. Part I covers the principles of bone substitute biomaterials for medical applications. One chapter reviews the quantification of bone mechanics at the whole-bone, micro-scale, and non-sc

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**Contenido:** Cover; Bone Substitute Biomaterials; Copyright; Contents; Contributor contact details; Woodhead Publishing Series in Biomaterials; Dedication; Part I: Properties of bone substitute biomaterials in medicine; 1: Bone substitutes based on biomineralization; 1.1 Introduction; 1.2 Key aspects driving the regeneration of hard connective tissues; 1.3 Biomineralization processes to obtain collagen/ hydroxyapatite composites as regenerative bone and osteochondral scaffolds; 1.4 Composite biopolymeric matrices able to mediate biomineralization 1.5 New intelligent bone scaffolds: functionalized devices able to respond to specific environmental conditions 1.6 Future trends in regenerative medicine: superparamagnetic hybrid bone scaffolds; 1.7 Conclusions; 1.8 Acknowledgements; 1.9 References; 2: Experimental quantification of bone mechanics; 2.1 Introduction; 2.2 Bone biology and mechanical function; 2.3 Whole-bone mechanical properties; 2.4 Micro-scale mechanical properties; 2.5 Nano-scale mechanical properties; 2.6 Hierarchical or multi-scale methods of bone quality assessment; 2.7 Conclusions; 2.8 References 3: Osteoinductivization of dental implants and bone-defect-filling materials 3.1 Introduction; 3.2 Biomimetic coating technique; 3.3 Conclusions; 3.4 References; 4: Bioresorbable bone graft substitutes; 4.1 Introduction; 4.2 Materials that allow resorption; 4.3 Bioresorbable materials as a source of other substances; 4.4 Challenges; 4.5 Conclusions; 4.6 References; Part II: Biomaterial substitute scaffolds and implants

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