

Table of Contents

Preface

I. Novel Biomaterials and Cells for Bone Tissue Engineering

| | |
|---|----|
| The Contribution of Natural Hydroxyapatite to the Development of Bone Substitutes M. Lombardi, P. Palmero, K. Haberko, W. Pyda and L. Montanaro | 3 |
| A Comparative Study between Melt-Derived and Sol-Gel Synthesized 45S5 Bioactive Glasses M. Lombardi, L. Gremillard, J. Chevalier, L. Lefebvre, I. Cacciotti, A. Bianco and L. Montanaro | 15 |
| Gelatin Coated 45S5 Bioglass®-Derived Scaffolds for Bone Tissue Engineering A.L. Metze, A. Grimm, P. Noeaid, J.A. Roether, J. Hum, P.J. Newby, D.W. Schubert and A.R. Boccaccini | 31 |
| AP40 Bioactive Glass Ceramic by Sol-Gel Synthesis: <i>In Vitro</i> Dissolution and Cell-Mediated Bioresorption I. Cacciotti, G. Lehmann, A. Camaioni and A. Bianco | 41 |
| Biological Characteristics of Dental Stem Cells for Tissue Engineering G. Mori, G. Brunetti, A. Ballini, A. Di Benedetto, U. Tarantino, S. Colucci and M. Grano | 51 |

II. Innovative Characterisation Technique for Bone Tissue Engineering

| | |
|---|-----|
| Mechanical Spectroscopy Examination of Human Dentin S. Amadori, E. Bonetti, I. Cappelloni and R. Montanari | 63 |
| Mechanical Characterization of Human Dentin: A Critical Review I. Cappelloni and R. Montanari | 75 |
| 3D Microtomography Characterization of Dental Implantology Bone Substitutes Used <i>In Vivo</i> R. Bedini, D. Meleo and R. Pecci | 97 |
| <i>In Situ</i> Time-Resolved Energy Dispersive X-Ray Diffraction Studies of Calcium Phosphate Based Bone Cements J. Rau, M. Fosca and V.S. Komlev | 115 |
| Cartilage Regeneration and the Role of Vibrational Spectroscopy in Future Joint Arthroplasty G. Pezzotti and N. Sugano | 121 |