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Designed Scaffolds; 5. Discussion; References; CHAPTER 5 Engineered Ca-Si Based Ceramics for Skeletal Tissue Reconstruction; 1. Introduction; 2. Ca-Si Based Bioactive Glass and Glass-Ceramics; 3. Ca-Si Based Binary Oxide System Bioactive Ceramics; 4. Ca-Si-Mg Bioactive Ceramics; 5. Future Trends. References; CHAPTER 6 Calcium Phosphate-Based Materials for Bone Regenerative Medicine; 1. Introduction; 2. Bioactive Glasses and Glass-Ceramics; 3. Silicon-Substituted Apatites; 4. Calcium Phosphate-Based Materials; 5. Bonelike® Medical Applications; References; CHAPTER 7 Cell Adhesion and Proliferation over Zinc-Glassreinforced Hydroxyapatite Composites (Zn-GRHA); 1. Introduction; 2. Materials and Methods; 3. Physicochemical and Morphological Analysis of the Zn-GRHA Composites; 4. In Vitro Biocompatibility of the Zn-GRHA Composites; 5. Conclusions. References

Sommario/riassunto

The aim of ""Biomaterials for Bone Regenerative Medicine"" is to review extensively the latest developments in Biomaterials and their application to bone regeneration *in vivo*. Indeed, research on biomaterials and their novel applications is essential because of the health issues related to the aging population. A wide range of worldwide investigations is being undertaken by eminent scholars in order to develop further innovative materials for next-generation applications. In future, it is expected that a tissue engineering approach, associating novel biomaterials with stem cells, will be avail

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System equation in transformed domain; 2.3.6 System equation in spatial domain; 2.3.7 Matrix partition technique: two examples; 2.3.8 Numerical results; 2.4 ANALYSIS OF PLANAR CIRCUITS
2.4.1 Discretisation of the transmission line equations 2.4.2 Determination of the field components; 2.5 FIELD AND IMPEDANCE/ADMITTANCE TRANSFORMATION; 2.5.1 Introduction; 2.5.2 Impedance/admittance transformation in multilayered and multisectioned structures; 2.5.3 Impedance/admittance transformation with finite differences; 2.5.4 Stable field transformation through layers and sections; 3 ANALYSIS OF RECTANGULAR WAVEGUIDE CIRCUITS; 3.1 INTRODUCTION; 3.2 CONCATENATIONS OF WAVEGUIDE SECTIONS; 3.2.1 LSM and LSE modes in circular waveguide bends; 3.2.2 LSM and LSE modes in straight waveguides
3.2.3 Impedance transformation at waveguide interfaces 3.2.4 Numerical results for concatenations; 3.2.5 Numerical results for waveguide filters; 3.3 WAVEGUIDE JUNCTIONS; 3.3.1 E-plane junctions; 3.3.2 H-plane junctions; 3.3.3 Algorithm for generalised scattering parameters; 3.3.4 Special junctions: E-plane 3-port junction; 3.3.5 Matched E-plane bend; 3.3.6 Analysis of waveguide bend discontinuities; 3.3.7 Scattering parameters; 3.3.8 Numerical results; 3.4 ANALYSIS OF 3D WAVEGUIDE JUNCTIONS; 3.4.1 General description; 3.4.2 Basic equations
3.4.3 Discretisation scheme for propagation between A and B 3.4.4 Discontinuities; 3.4.5 Coupling to other ports; 3.4.6 Impedance/admittance transformation; 3.4.7 Numerical results; 4 ANALYSIS OF WAVEGUIDE STRUCTURES IN CYLINDRICAL COORDINATES; 4.1 INTRODUCTION; 4.2 GENERALISED TRANSMISSION LINE (GTL) EQUATIONS; 4.2.1 Material parameters in a cylindrical coordinate system; 4.2.2 GTL equations for z-direction; 4.2.3 GTL equations for -direction; 4.2.4 Analysis of circular (coaxial) waveguides with azimuthally-magnetised ferrites and azimuthally magnetised solid plasma
4.2.5 GTL equations for r-direction

Sommario/riassunto

The Method of Lines (MOL) is a versatile approach to obtaining numerical solutions to partial differential equations (PDEs) as they appear in dynamic and static problems. This method, popular in science and engineering, essentially reduces PDEs to a set of ordinary differential equations that can be integrated using standard numerical integration methods. Its significant advantage is that the analysis algorithms follow the physical wave propagation and are therefore efficient. This is because the fields on the discretisation lines are described by generalised transmission line (GTL) equations.
