Sol-gel Nanocoatings of Bioceramics

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Abstract

The ability to produce homogeneous high-purity materials is of great interest to industrial and medical applications. In addition, the chemical and physical changes observed at the nanoscale and their influence on properties have been an important academic interest. The gel-structure transition plays a critical role in the formation as well as the current production of various types of sol-gel-derived materials such as nanopowders, nanofibers, nanocoatings, nanocomposites, and solid monoliths. It is the area of thin film coatings produced by sol-gel technology that this chapter covers. In particular, this chapter focuses on the basic synthesis and application methods to produce nanocoatings for biomedical applications. This chapter also attempts to answer some of the pertinent questions related to sol-gel processing and production methods and issues related to the fundamental understanding of the sol-gel process.

Keywords

Alkoxide Bioceramics Calcium phosphates Coral Hydroxyapatite Nanocoatings Sol-gel Synthesis