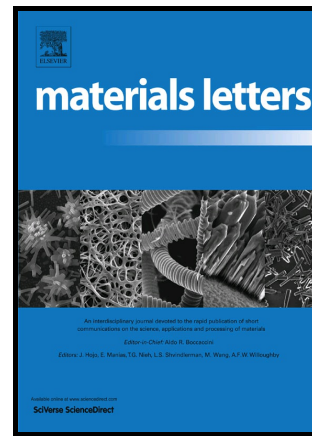


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Synthesis of monodispersed mesoporous bioactive glass nanospheres for bone repair

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Abstract

Mesoporous bioactive glass nanospheres (SiO₂-CaO-P₂O₅, MBG) with remarkable mono-dispersity were successfully synthesized using Pluronic P123 and cetyltrimethylammonium bromide (CTAB) mixed surfactants under neutral condition. The characterizations revealed that MBG NPs had uniform spherical morphology with a homogeneous diameter around 100 nm and mesopores sized at 3.7 nm. The synthesized nanospheres also have excellent bone-like apatite formation ability and much faster degradation rate compared to pure silica nanoparticles. In addition, MBG NPs showed drug storage/release property demonstrated for dexamethasone drug.

Keywords

Mesoporous; Bioceramics; Nanoparticles; Drug delivery; Bone repair

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