

Preparation and In Vitro Bioactivity of Magnesium and Strontium Doped Rice Hull Ash Silica Based Melt Derived Bioglasses

Sevil Yücel (Yildiz Technical University, Department of Bioengineering), Pınar Terzioğlu (Muğla Sıtkı Koçman University, Department of Chemistry), Zeynep Anıl Konukoğlu (Yildiz Technical University, Department of Bioengineering), Yeliz Başaran- Elalmış (Yildiz Technical University, Department of Bioengineering), Bilge Sema Tekerek (Yildiz Technical University, Department of Bioengineering)

Bioactive glasses are inorganic bone repair and regeneration materials which have been used for various applications such as bone and cartilage reconstruction in orthopedics, oral, maxillofacial and otological surgery. The bioactive glass can be prepared through sol-gel or melting method.

In the present study, rice hull ash silica based, magnesium (1%) and strontium (12,5%) doped bioactive glasses were prepared by use of melting method. The bioglasses were evaluated by X-ray diffraction, scanning electron microscopy and Vickers hardness measurements before and after soaking in the simulated body fluid. X-ray diffraction patterns demonstrated prevalence of hydroxyapatite and β -TCP related peaks. The results indicated that MgO doped bioactive glass showed better bioactivity.

Keywords: Bioactivity; melt derived bioactive glass; magnesium; rice hull silica; strontium.