

**SYNTHESIS AND CHARACTERIZATION OF STRONTIUM
AND ZINC CONTAINING SOL GEL DERIVED BIOACTIVE
GLASS**

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ABSTRACT

SYNTHESIS AND CHARACTERIZATION OF STRONTIUM AND ZINC CONTAINING SOL GEL DERIVED BIOACTIVE GLASS

The silica bioactive glass of $\text{SiO}_2\text{-P}_2\text{O}_5\text{-CaO-SrO-ZnO}$ consisting of 0%, 1%, 3% and 5% of strontium and zinc in weight percentage was synthesized by chemical based sol gel method and analyzed by TGA, FTIR and SEM instrument. The main objective is to study the structural properties of glass and its physical morphology by the FTIR and SEM respectively and also study the bioactivity of glass before and after soaked with SBF solution. Which is similar to human body fluid in order to predict the bone bonding ability of bioactive glass. If growth of white apatite layer is observed after immersed in SBF for seven days thus the glass has ability of bone bonding. The TGA analysis reveals the silica gel was successfully synthesized since all the precursors and moistures were evaporated. The FTIR analysis indicates presence of apatite layer by the P-O bending band which was observed in all composition after soaked with SBF. FTIR also reveals the Si-O band which proves formation of crystalline silicate (silica gel). SEM images shows a needle and flake like structure in 1% bioactive glass after treated with SBF, and a denser and thicker white coating which covered more of the surface of glass was observed in 3% soaked bioactive glass.