



A facile co-gelation sol gel route to synthesize CaO: P₂O₅: SiO₂ xerogel embedded in chitosan nanocomposite for bio-applications

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Abstract : Calcium phosphosilicate xerogel (CPSX) (35 CaO: 57 SiO₂: 7 P₂O₅) as a bio- glass and (CPSX)/chitosan (CS) nanocomposite were successfully prepared by a simple and effective sol gel method. (CPSX) was firstly synthesized in acidic condition then mixed with CS solution and the resulting nanocomposite was fabricated. The synthesized samples were characterized by X-ray diffraction, Transmission and Scanning Electron Microscopy and Fourier Transform Infrared Spectroscopy. XRD patterns of the synthesized samples exhibit calcium phosphosilicate nano-structure phase embedded in the chitosan matrix. TEM and SEM images indicate the presence of (CPS) nanoparticles of nearly spherical shape with nano-sizes inside the (CS) matrix. Regarding the textural properties, it was observed progressive change in the surface for (CPSX) characteristics after embedded in (CS) matrix. The obtained results were recommending the use of these samples for bio-applications, where the particle size control and morphology control are requi.

Keywords: *Sol gel process, Calcium phosphosilicate xerogel, chitosan polymer, Biomaterials.*

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