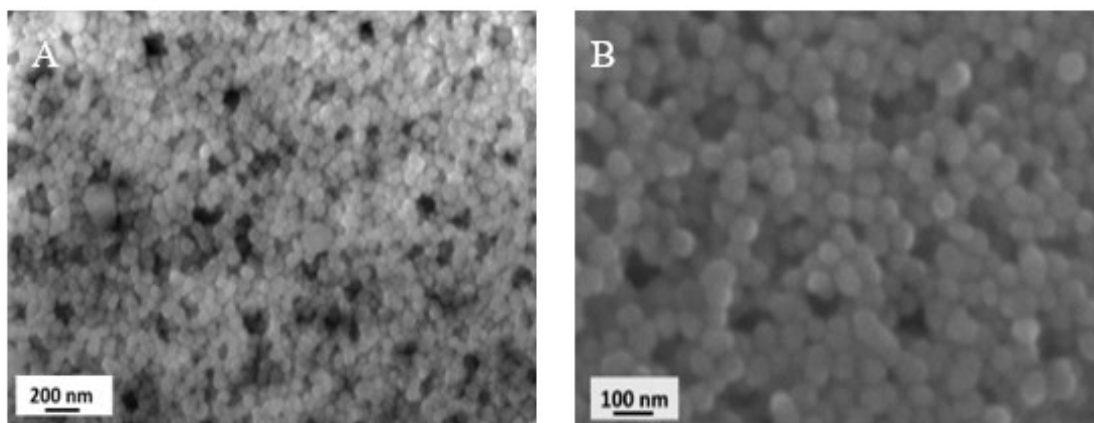


Supplementary Information



Supplementary Information 1. SEM image of prepared SiO₂ nanoparticle at scale 200 μm (A). SEM image of at SiO₂ nanoparticle at scale bar 100 μm (B)

With respect to the above SEM image, average particle size of the SiO₂ nanoparticle is 64 nm (calculated from image J software).

Radius of SiO₂ particle, $r_{\text{silica}} = 32 \text{ nm}$.

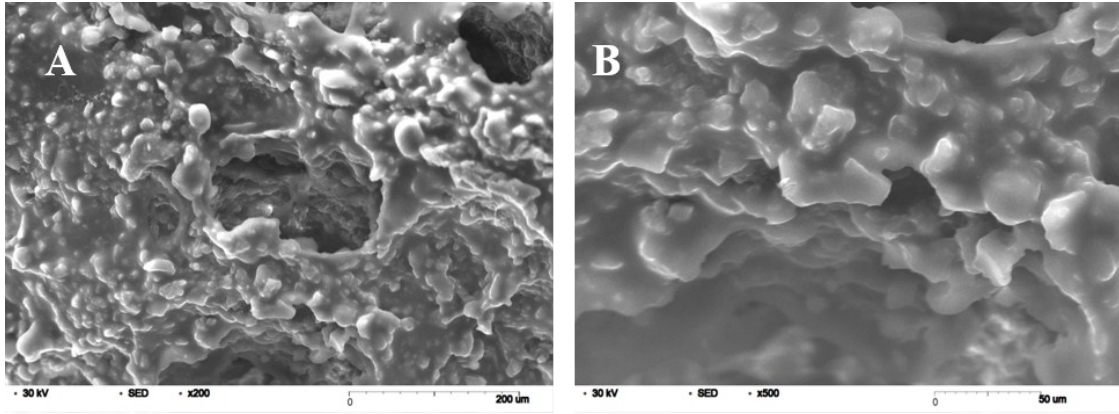
Density of SiO₂, $\rho_{\text{silica}} = 2.05 \text{ g/cm}^3$.

Volume of single SiO₂ particle, $V_{\text{silica}} = \frac{4\pi r_{\text{silica}}^3}{3} = 1.37 \times 10^{-16} \text{ cm}^3$.

Weight of a single SiO₂ particle, $W_{\text{silica}} = \rho_{\text{silica}} \times V_{\text{silica}} = 2.80 \times 10^{-16} \text{ g}$.

No. of SiO₂ particles per gram, $N = 1/W_{\text{silica}} = 3.57 \times 10^{15}$ particles per gram.

Hence, Group A has 0 SiO₂ particles, Group B has 8.92×10^{15} particles and Group C has 17.85×10^{15} particles.



Supplementary Information 2. SEM image of lyophilized scaffold with 7.5wt % of SiO₂ nanoparticle at lower magnification with scale 200μm (A). SEM image of lyophilized scaffold with 7.5wt % of SiO₂ nanoparticle at higher magnification with scale bar 50μm (B).