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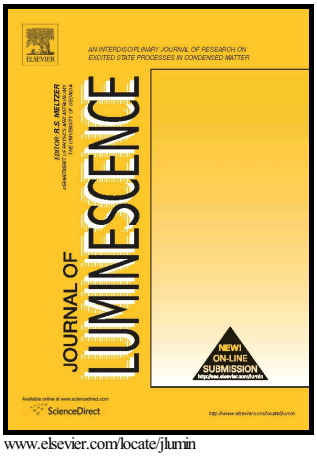

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Abstract

We report the synthesis and detailed characterization of intrinsically/lable-free luminescent mesoporous silica nanoparticles (L-MSN), which may have useful biomedical applications. These particles were prepared by modified Stober's method followed by calcination. By optimizing the ratio of (3-aminopropyl triethoxysilane) APTS to tetraetthoxysaline (TEOS), particles with size ~43 nm and size dispersion ~12% were obtained. The luminescence of L-MSN is suggested to be due to the formation of carbonaceous compounds, giving particles yellowish brown colour, during the process of calcination at optimum temperatures ~ 400 °C. Interestingly, our studies suggest that these carbonaceous impurities are carbon dots (C-Dots) and fluorescence anisotropy decay measurements indicate C-Dots as integral part of L-MSN.