

Sonochemical synthesis of BBOT-encapsulated silica nanoparticles

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Light emitting dye with high photostability is one of the key materials in laser, nonlinear optics, and bioanalytical applications. In order to utilize fluorescent dyes in biological applications, properties such as high quantum yield, stability in aqueous phase, long-term photo stability and non-toxicity are required. Some light emitting materials satisfy these requirements by possessing high quantum yield and long-term photostability. However, the high toxicity and low chemical stability of these materials have been obstacles in wide applications. Therefore, stable and cheap inorganic materials were employed to modify and improve both mechanical and chemical properties of the light emitting dyes. Among several kinds of inorganic materials, silica is one of the most promising materials due to the low toxicity and high chemical and mechanical stabilities. In this study, we successfully fabricated 2,5-Bis(5-tert-butyl-2-benzoxazolyl)-thiophene (BBOT)-encapsulated silica nanoparticles by sonochemical sol-gel method. The dye-encapsulated silica nanoparticles are characterized and analyzed with SEM, UV/VIS spectrometer and other tools.