

Synthesis of cubic magnesium oxide nano particles in aqueous media at low temperature

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An unprecedented method is used to prepare magnesium oxide in aqueous solution which is widely known for its large applications such as it has high band gap energy (7.8 eV), high surface area, its has high catalytic properties in many chemical reactions. The thin layer of magnesium oxide with the nano particles plays a key role in the formation of buffer layer in superconducting and ferroelectric materials. Furthermore magnesium oxide nano particles used as a sensor elements for humidity and gas sensing applications. Magnesium oxide has high ionic crystalline properties. The crystal lattice of magnesium oxide is 4.213 Å. The present work reports the convenient sol-gel methodology for preparing magnesium oxide nanoparticles. Cubic magnesium oxide nano particles are synthesized in aqueous media by the sol-gel method at low temperature. Sol-gel technique of preparation is cost effective and produces fine particles. X-ray diffraction patterns (XRD) show highly crystalline nature of as prepared MgO nanoparticles. FESEM images showed the formation of MgO nano cubes with diameter of 70 to 85 nm and thickness is 50-70 nm. Infrared spectroscopic measurement reveals that magnesium oxide precursor changes to oxide due to enchantment of temperature.