

### Synthesis and Microstructure of Mn doped SiO<sub>2</sub> Nanoparticles by a Reverse Micelle and Sol-Gel Processing

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Mn doped SiO<sub>2</sub> nanoparticles have been synthesized using a reverse micelle technique combined with metal alkoxide hydrolysis and condensation. The size of the particles and the thickness of the coating can be controlled by manipulating the relative rates of the hydrolysis and condensation reaction of TEOS within the micro-emulsion. The average size of synthesized Mn doped SiO<sub>2</sub> nanoparticles were about in the size range of 10-30 nm and Mn particles 5-15 nm. The effects of synthesis parameters, such as the molar ratio of water to TEOS and the molar ratio of water to surfactant, are discussed.

**Keywords:** Mn doped SiO<sub>2</sub>, Nanoparticles, Reverse Micelle, Sol-Gel Processing

### Synthesis and Microstructure of Zn doped SiO<sub>2</sub> Nanoparticles by a Reverse Micelle and Sol-Gel Processing

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Zn doped SiO<sub>2</sub> nanoparticles have been synthesized using a reverse micelle technique combined with metal alkoxide hydrolysis and condensation. The size of the particles and the thickness of the coating can be controlled by manipulating the relative rates of the hydrolysis and condensation reaction of TEOS within the micro-emulsion. The average size of synthesized Zn doped SiO<sub>2</sub> nanoparticles were about in the size range of 10-30 nm and Zn particles 5-15 nm. The effects of synthesis parameters, such as the molar ratio of water to TEOS and the molar ratio of water to surfactant, are discussed.

**Keywords:** Zn doped SiO<sub>2</sub> , Nanoparticles, Reverse Micelle , Sol-Gel Processing