

## Synthesis and characterization of metal-silica heterogeneous nanocomposite particles by chemical reduction process

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Metal-silica heterogeneous nanocomposite particles were prepared by alcohol reducing method. Amino(-NH<sub>2</sub>) and Thiol(-SH) group were employed as a binding material between metal nanoparticle and silica surface. We studied the effects of chain length of PVP by using four different molecular weights of PVPs (M.W.=10,000, 29,000, 40,000, and 58,000), respectively. Also we investigated the effects of concentration of PVPs. We used short chain PVP(M.W.=29,000) and changed concentration(0.5wt%, 1wt%, 1.5wt%, and 2.5wt%), respectively. The results were that the Metal nanoparticle on silica surface was influenced by different terminal groups on silica surface and varying the concentration of PVP. The resulting nanocomposite particles were characterized using transmission electron microscopy (TEM) and UV-vis. absorbance spectra.