

## **Filtering Effect of the Polymer on Particles upon Aqueous to Organic Phase Transfer**

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### **Abstract**

Size exclusion of coinage metal particles (copper, silver and gold) via aqueous to organic phase transfer is described. Metal particles were synthesized in the aqueous phase via simple borohydride reduction in the presence of CTAB as stabilizer. These particles were then transferred into the organic phase with the aid of 2-propanol as the transferring agent. Various organic environments were studied *viz.* toluene with or without epoxy polymer. The particles size and size distribution of the metal particles in various environments were deduced from TEM. Generally, particles size and size distribution increase from aqueous to organic. The increment of size from the aqueous to organic phase is due to the destruction of CTAB bilayers that stabilized the metal particles in aqueous phase. The destruction is probably induced during the stirring process. However, the particles size and size distribution decrease upon addition of epoxy into the organic phase and further decrease when more of epoxy is added. This implies a phenomenon where the polymer acts as a filter whereby only the finer particles are able to cross from the aqueous to organic phase boundary as compared to neat organic solvent. The nature of the resultant conformation of the polymer in the organic solvent is believed to be responsible for this filtering phenomenon.

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