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Synthesis of copper oxide nanoparticles using sodium borohydride as a reducing agent and gelatin as a capping agent V.3

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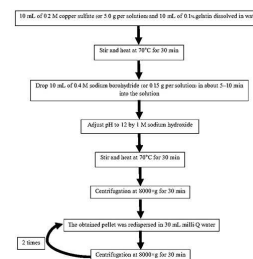
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We use this protocol and it's working

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Abstract

Copper oxide nanoparticles were synthesized using sodium borohydride as a reducing agent and gelatin as a capping agent according to the method previously described with some slight modifications of method of Liu et al., 2012.

Materials

Materials

1. Copper sulfate pentahydrate
2. Gelatin
3. Sodium borohydride
4. Sodium hydroxide
5. Milli-Q water

Equipment

1. Magnetic stirring
2. A centrifuge
3. Sonicator
4. An oven

Chemical synthesis of gelatin capped copper oxide nanoparticles

- 1 10 mL of 0.2 M copper sulfate (or 5.0 g per solution) and 10 mL of 0.1% gelatin dissolved in water were mixed and heated at 70°C for 30 min under magnetic stirring.
- 2 10 mL of 0.4 M sodium borohydride (or 0.15 g per solution) was slowly dropped in about 5–10 min into the solution.
- 3 The pH of this mixture was adjusted from approximately 2 to 12 by 6 mL of 1 M sodium hydroxide, then heated at 70°C with magnetic stirring for 30 min.
- 4 The obtained copper oxide nanoparticles were washed by centrifugation of the nanoparticle dispersion at 8000×g for 30 min.
- 5 The obtained pellet was redispersed in 30 mL milli-Q water and this precipitation/washing procedure was repeated two times.
- 6 The precipitate was dispersed in absolute ethanol and dried at 60°C for 8 h.
- 7 The particles were transferred into light-protecting containers and stored in a desiccator at room temperature until use.

Protocol references

Liu QM, Zhou DB, Yamamoto Y, Ichino R, Okido M. Preparation of Cu nanoparticles with NaBH₄ by aqueous reduction method. *Trans Nonferrous Met Soc China*. 2012;22(1):117–123.