

Insights into synthesis of nanosized Ni and Fe particles by chemical reduction method

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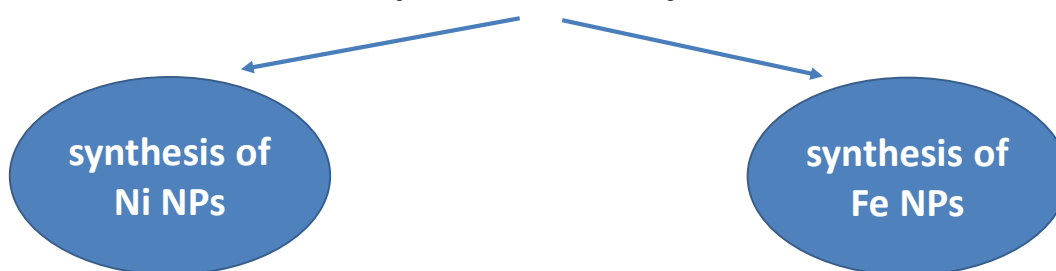
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main area of interest

synthesis of the magnetic nanoparticles via the chemical reduction method

performed study



Ni nanoparticles (NPs) have been produced via a chemical reduction method employing hydrazine hydrate ($\text{N}_2\text{H}_4 \cdot \text{H}_2\text{O}$) and polyvinylpyrrolidone (PVP) as reducing and surfactant agents, respectively. Nickel chloride (NiCl_2) was dissolved in diethylene glycol (DEG) as the metal precursor. Sodium hydroxide (NaOH) was used to control the pH of solutions.



solution 1



solution 2



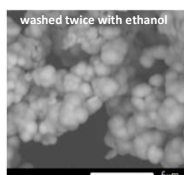
after mixing



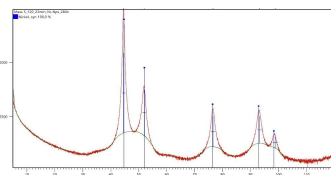
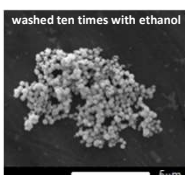
after 3 hours



after 8 hours



SEM of the Ni NPs



XRD of the Ni NPs

Fe nanoparticles (NPs) have been produced via a chemical reduction method employing sodium boron hydrate (NaBH_4) as a reducing agent. Iron(III) chloride hexahydrate ($\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$) was dissolved in ethylene glycol (EG) as the metal precursor.



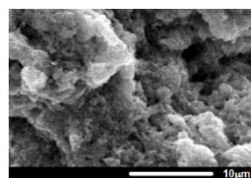
solution 1



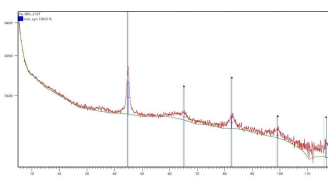
solution 2



after mixing



SEM of the Fe NPs



XRD of the Fe NPs

Financial support for this study came from the Austrian Science Fund (FWF) under Project No. P 34894.