Electronic Supplementary Information

Figure S1. The TEM image of the obtained magnetite nanoparticles in 15 ml n-octylamine and 1 ml n-octanol

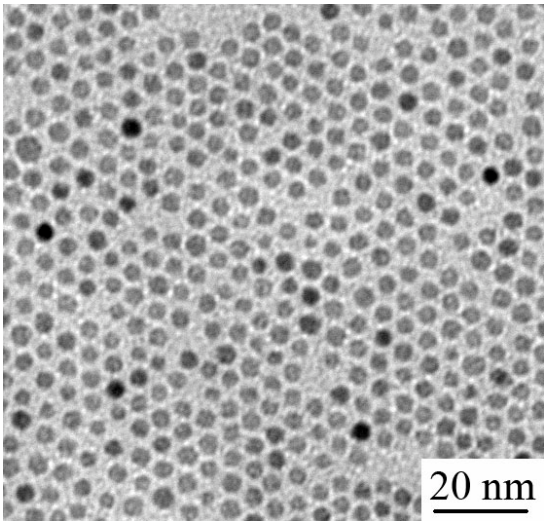


Figure S2. The TEM image of the obtained magnetite nanoparticles in 1 ml n-octylamine and 15 ml n-octanol

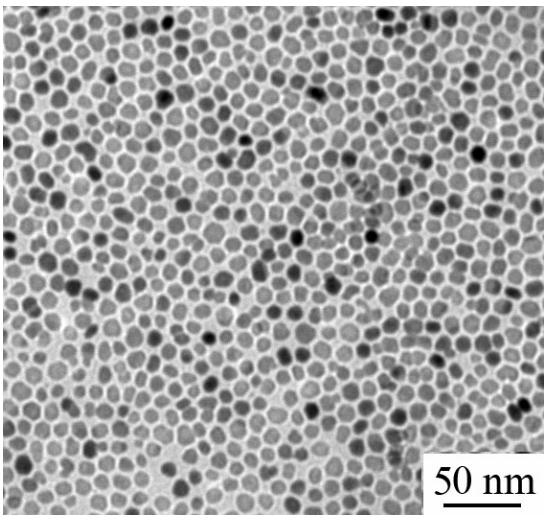


Figure S3. Low-angle XRD pattern when the solution of sample was dropped on a glass substrate

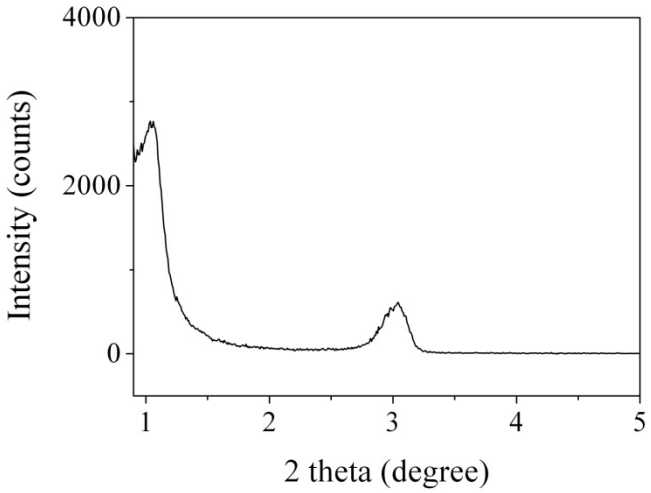


Figure S4. TEM image of the obtained magnetite nanoparticles assembling together on the carbon-supported copper grid.

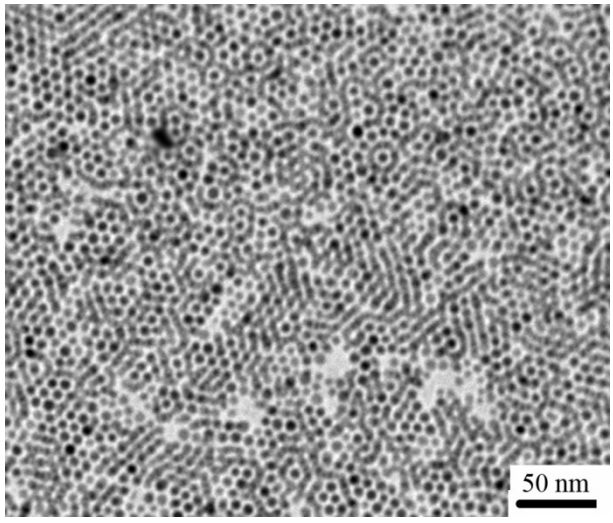


Figure S5. Survey XPS spectra of the obtained magnetite nanoparticles with C as standard

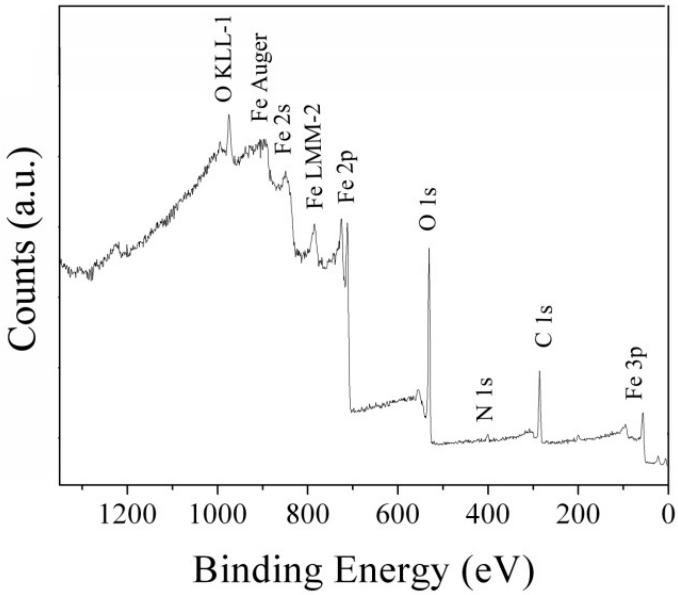


Figure S6. XPS pattern of O element in the Fe_3O_4 sample

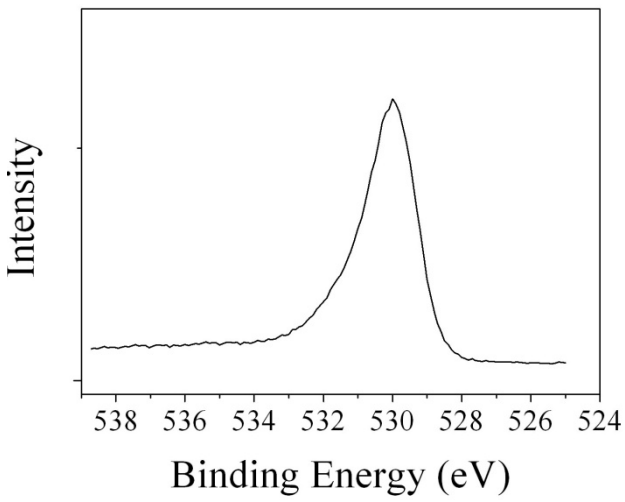


Figure S7. XPS pattern of N element in the Fe_3O_4 sample

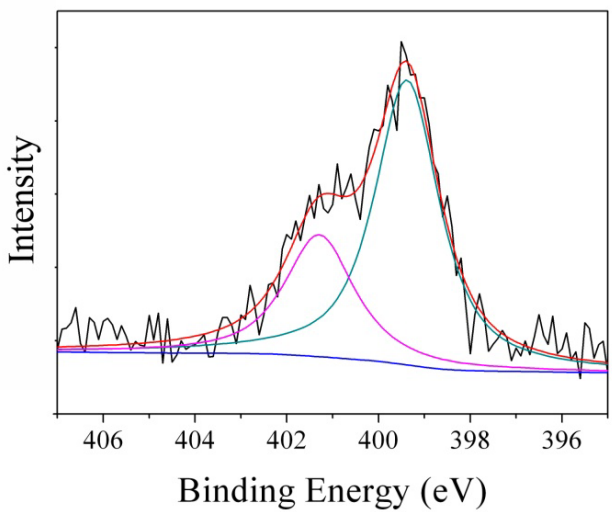


Figure S8. TG curves of the obtained 5-nm Fe_3O_4 nanoparticles in the air and Ar atmosphere, respectively.

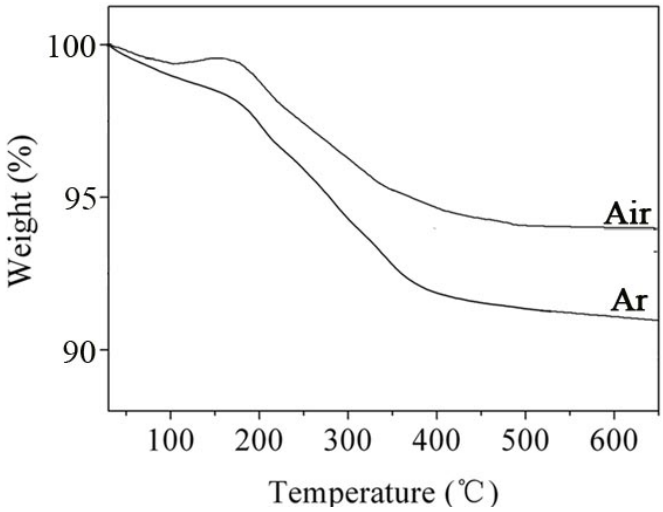
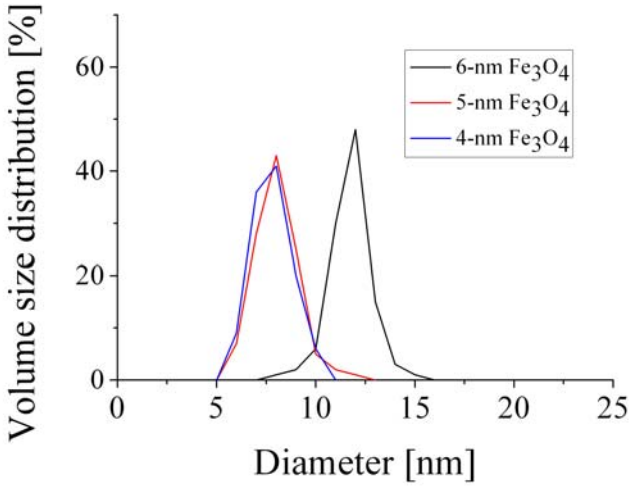


Figure S9. Dynamic light scattering (DLS) of the CTAB aqueous dispersion of the obtained magnetite nanoparticles of 4-nm, 5-nm and 6-nm



The reason of selecting 240 ℃ as reaction temperature:

It is not safe for solvothermal reactions at the temperature higher 250 ℃ which was noted in the instruction book of our Teflon-lined autoclaves. On the other hand, the magnetite nanoparticles could not obtained when the reaction temperature was lower than about 210℃, because pyrogenation of $Fe(acac)_3$ did not happen. Selecting 240℃ would induce better crystallizing than lower temperature in the range of 210-240 ℃.