

Vortex fluidics synthesis of polymer coated superparamagnetic magnetite nanoparticles

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Supporting information

Table 1: AAS-ICP measurements of SQuID sample iron and magnetite concentration and mass
PVP = Polyvinylpyrrolidone

	Sample Mass (mg)	Iron Concentration (ppm)	Iron Mass (mg)	Magnetite Mass (mg)
PVP40 batch	13.4	580000	7.772	10.74
PVP360 batch	13	664000	8.632	11.93
PVP40 7000 rpm 0° tilt	9.9	452000	4.475	6.18
PVP360 7000 rpm 0° tilt	11.5	326000	3.749	5.18
PVP360 7000 rpm 45° tilt	11.5	320000	3.68	5.09

Table 2: Magnetic properties measured by SQuID of magnetite samples
PVP = Polyvinylpyrrolidone

	Magnetic Saturation 300K (emu g ⁻¹)	Susceptibility 300K (emu g ⁻¹ ose ⁻¹)	Remanence 300K (emu g ⁻¹)	Remanence 5K (emu g ⁻¹)	Coercivity 5K (ose)
PVP40 batch	69.4	0.08	1.55	20.64	475
PVP360 batch	59.4	0.08	1.97	21.47	550
PVP40 7000 rpm 0° tilt	62.3	0.07	1.57	18.32	600
PVP360 7000 rpm 0° tilt	53.3	0.07	1.37	17.93	550
PVP360 7000 rpm 45° tilt	67.7	0.08	1.48	20.70	550

Table 3: Particle size measured from the XRD spectra by the Scherrer equations
XRD = x ray powder diffraction, FWHM = full height half maximum.

	2θ ($^{\circ}$)	FWHM ($^{\circ}$)	Diameter (nm)
PVP40 batch	35.7	0.87	16.3
PVP360 batch	35.5	1.34	12.6
PVP40 7000 rpm 0° tilt	35.7	0.82	17.7
PVP360 7000 rpm 0° tilt	35.9	1.14	11.4
PVP360 7000 rpm 45° tilt	35.6	1.34	12.0