Supplementary Information for

Ferromagnetic Liquid Droplets with Adjustable Magnetic Properties

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This PDF file includes:

Other supplementary materials for this manuscript include the following:

Movies S1 to S3

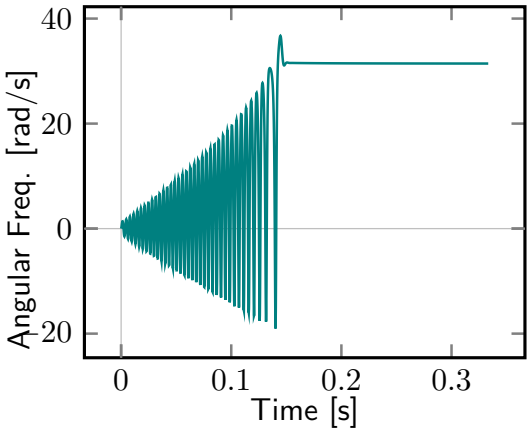

Fig. S1. The simulated synchronized angular frequency of the FMLD under rotating magnetic field with driving frequency of 5 Hz. The oscillation is disappeared when the rotation of FMLD can catch up with the driving magnet.

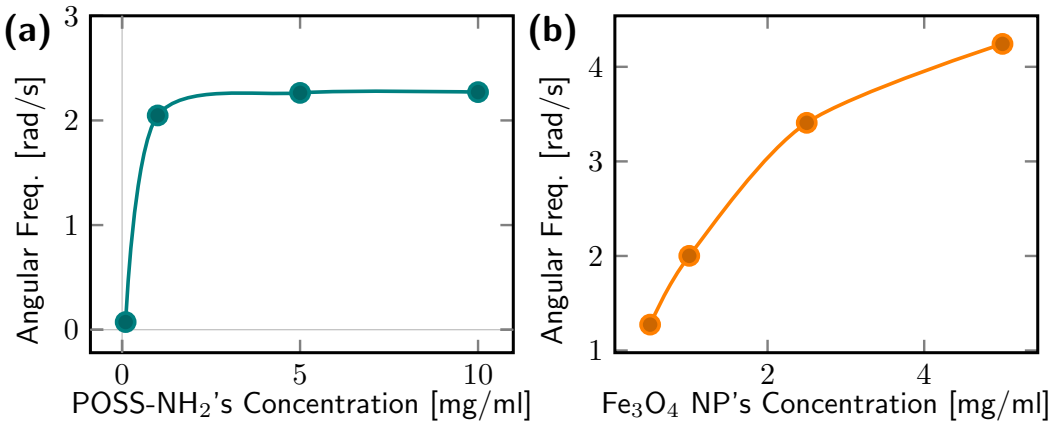

Fig. S2. (a) The equilibrium angular frequency of FMLD varies with the concentration of the POSS in the oil. The concentration of Fe_3O_4-COOH NPs is 1 mg/ml, the pH of the aqueous phase is 5 and the driving frequency is 5 Hz. (b) The equilibrium angular frequency of FMLD varies with the concentration of Fe_3O_4-COOH NPs in the aqueous phase. The concentration of the ligand in the oil is 1 mg/ml, and the other parameters are the same as above.

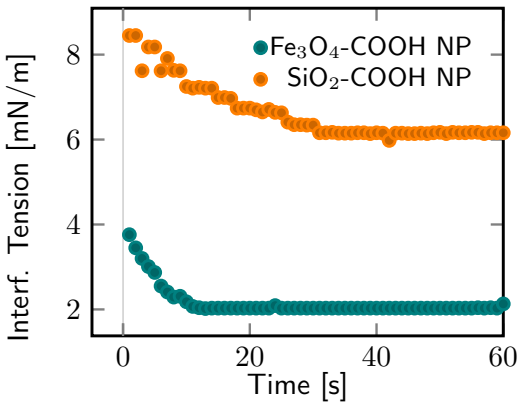

Fig. S3. Time evolution of the interfacial tension of Fe_3O_4-COOH NPs and SiO_2-COOH NPs (1 mg/ml) dispersed in the aqueous phase introduced in the toluene phase with POSS-NH_2 (1 mg/ml) individually.

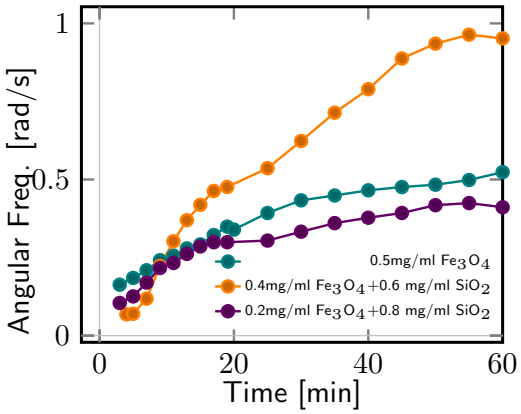

Fig. S4. Time evolution of the angular frequency of the FMLD with different contents. The concentration of the POSS-NH_2 is 1 mg/ml, and pH of the aqueous phase is 5. The driving frequency for all the experiments is 5 Hz. The jamming of the SiO_2 NPs at the interface enhanced the dipole interaction among the MNPs and the net magnetization of total droplet.

Movie S1. The FMLD rotates in the oil phase dissolving POSS-NH_2 ligands driven by the external rotating magnetic field and it is captured by the optical microscopy.

Movie S2. The merge of the unjammed droplets initially formed in the oil phase.

Movie S3. The rotating of dispersed assembled aggregates at the interface of the unjammed droplets.