Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.
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Supporting information

Inducing glassy magnetism in Co-ferrite nanoparticles through crystalline nanostructure

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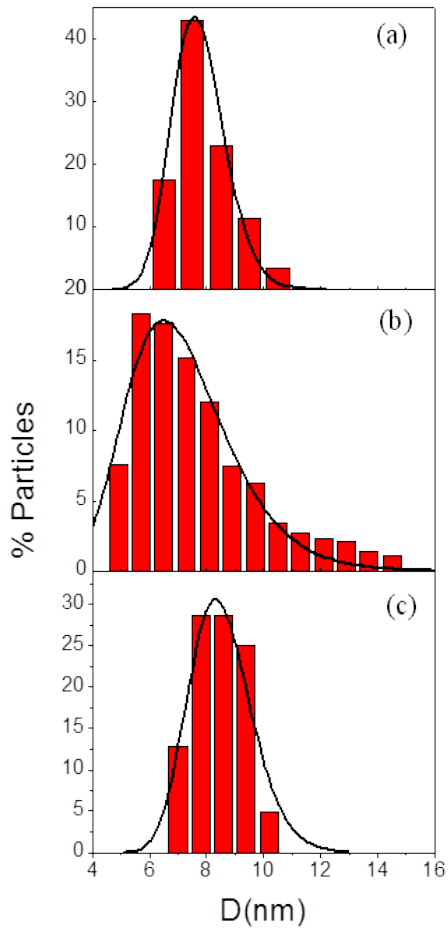


Figure S1. Particle size distributions for the three samples: (a) R1, (b) R2, (c) R3.

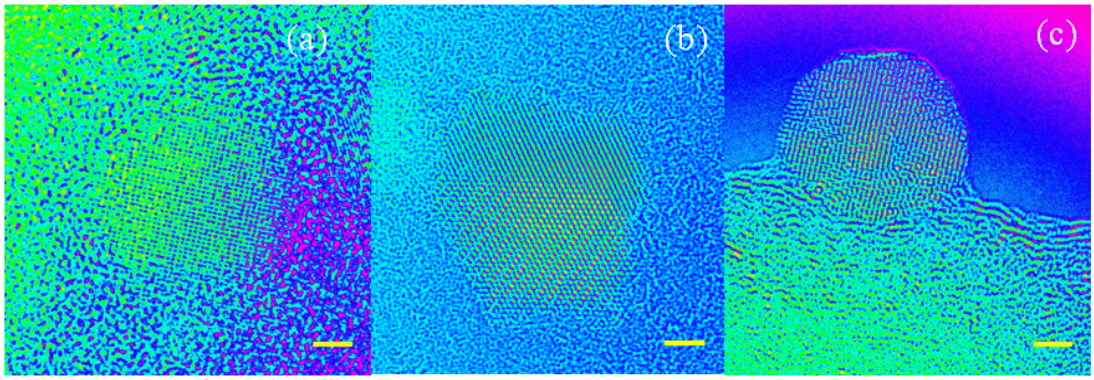


Figure S2. HRTEM micrographs of $CoFe_2O_4$ NPs with color contrast: **(**a) R1, (b) R2, (c) R3. Scale bars correspond to 2 nm.

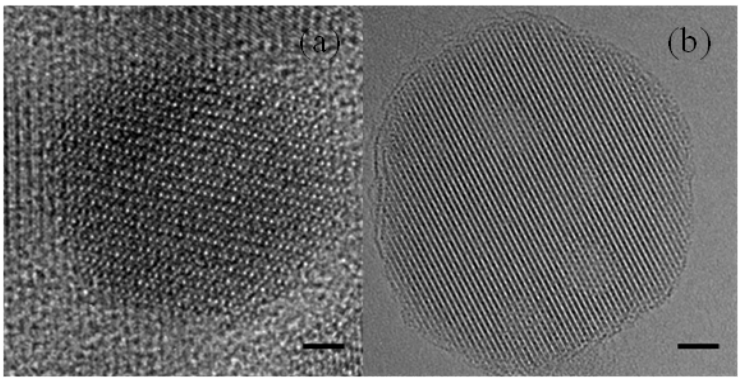


Figure S3. HRTEM micrographs of $CoFe_2O_4$ NPs for R2 with different degree of crystallinity. Scale bars in (a) and in (b) correspond to 1.5 and 2 nm respectively.

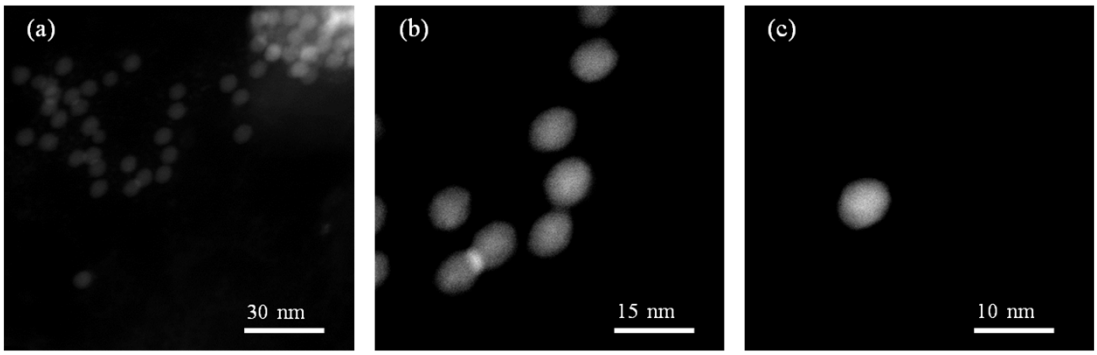
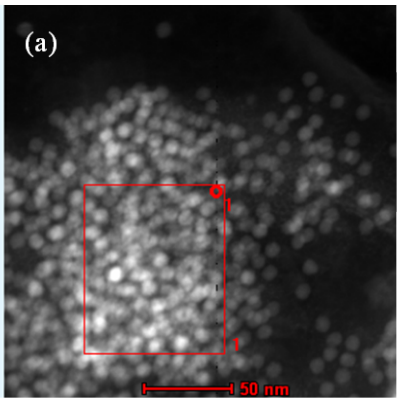


Figure S4. High-angle annular dark field (HAADF) images of several nanoparticles for R3.



(b)

Element quantification	%
Fe	67(7)
Co	33(4)

(c)

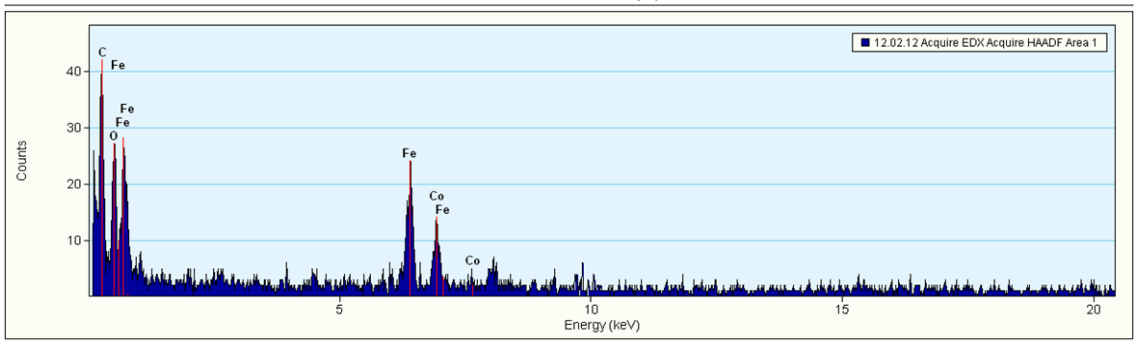


Figure S5. (a) HAADF Energy dispersive X-ray Spectroscopy (EDX) image of several NPs in R3, (b) Fe and Co percentage quantification, (c) EDX spectrum for the red area in a).

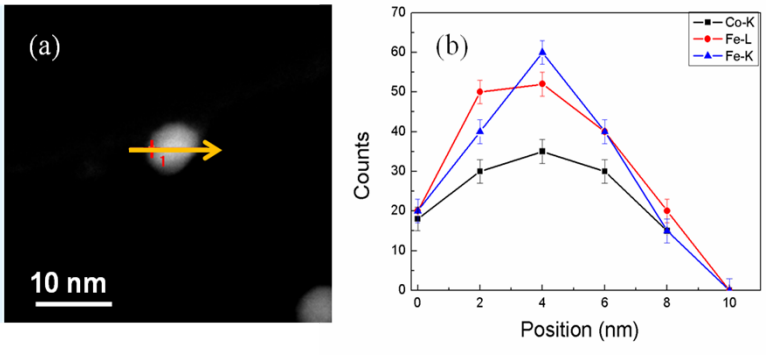


Figure S6. R3: (a) HAADF EDX image of a particle and (b) element quantification along the orange arrow.

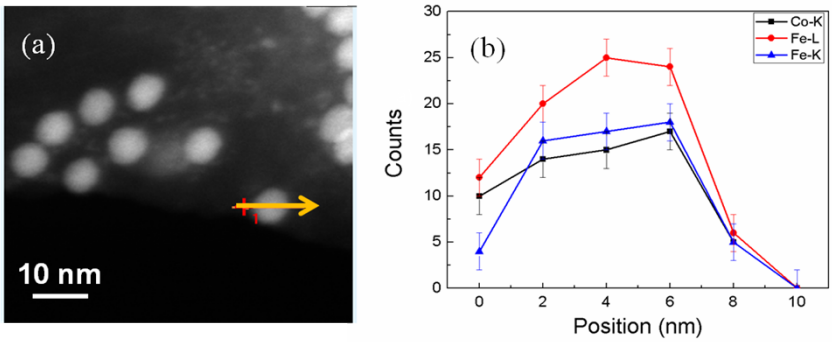


Figure S7. R3: (a) HAADF EDX image of a particle and (b) element quantification along the orange arrow.

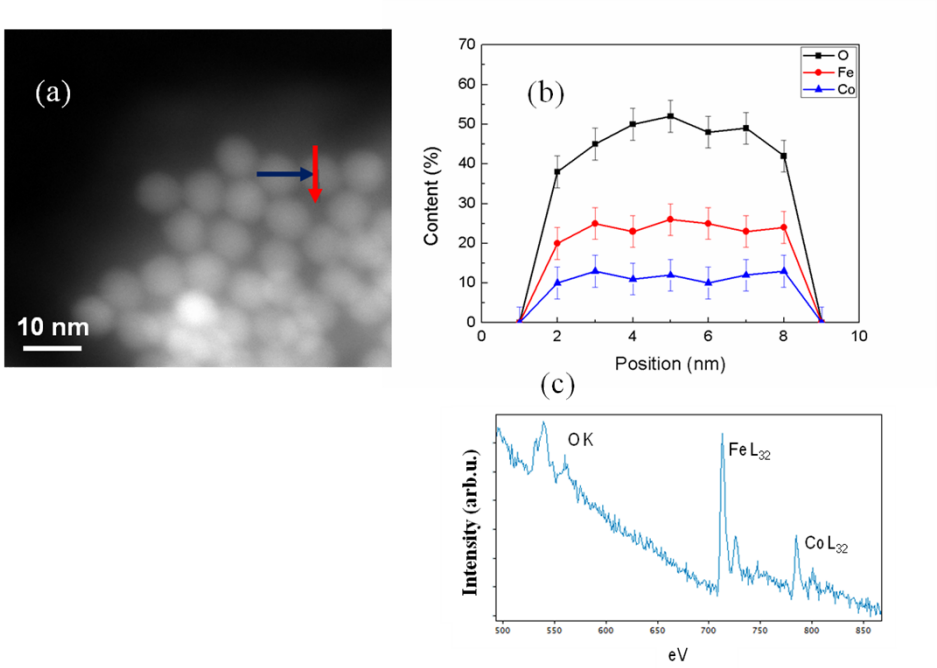


Figure S8. R3: (a) HAADF STEM image of some particles and (b) element quantification along the red arrow. (c) Sample spectrum measured at the point marked with the blue arrow in (a).

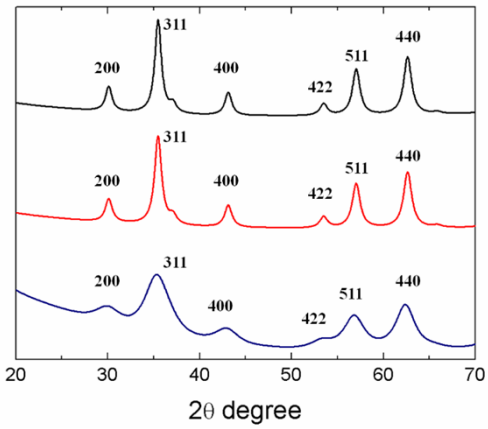


Figure S9. X- ray diffraction patterns together with the indexation of the Bragg peaks to an inverse spinel structure: R1 (black solid line), R2 (red solid line), R3 (blue solid line).

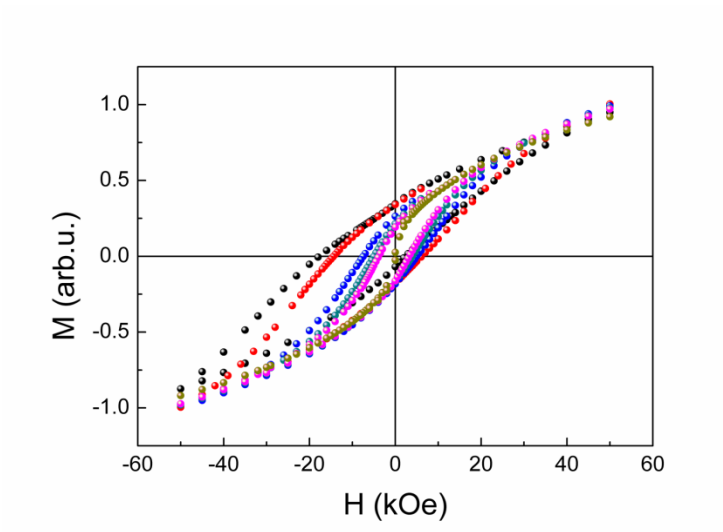


Figure S10. Hysteresis loops after FC sample R3 from 250 K down to the final measuring temperature (T) under an applied magnetic field of 10 kOe. T = 5 K (black spheres), 20 K (red spheres), 60 K (blue spheres), 80 K (green spheres), 90 K (pink spheres) and 150 K (dark yellow).

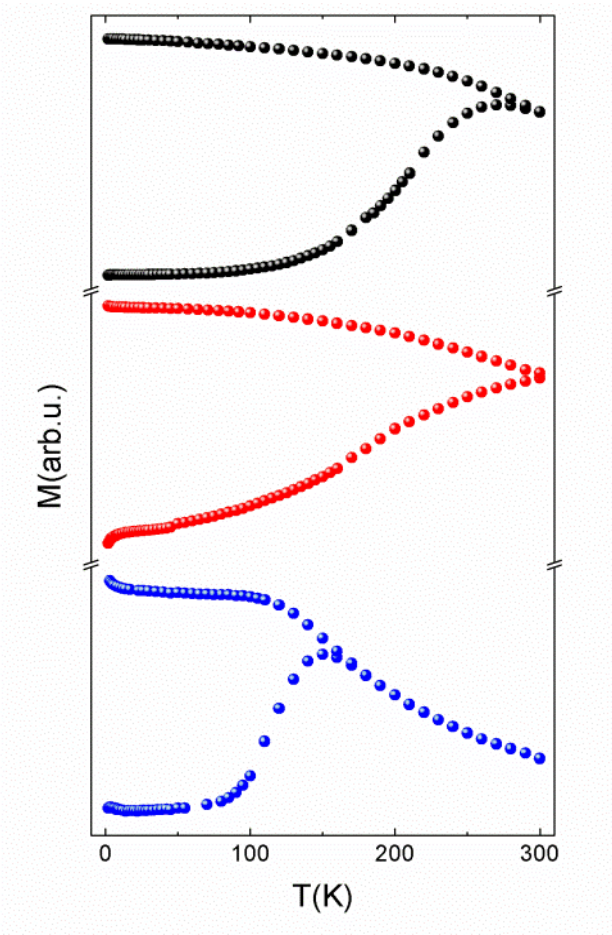


Figure S11. M_{ZFC}-M_{FC} for R1 (black spheres), R2 (red spheres), R3 (blue spheres).