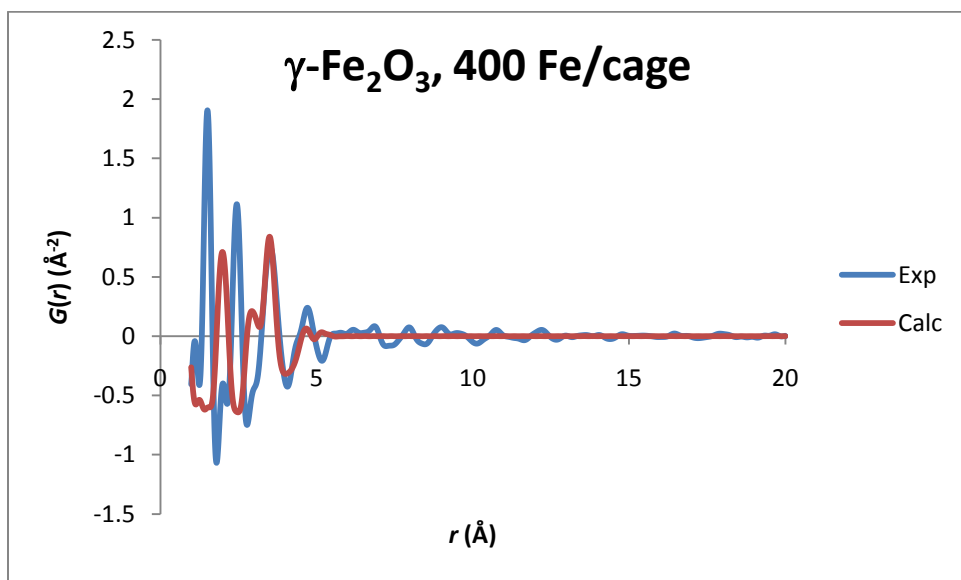
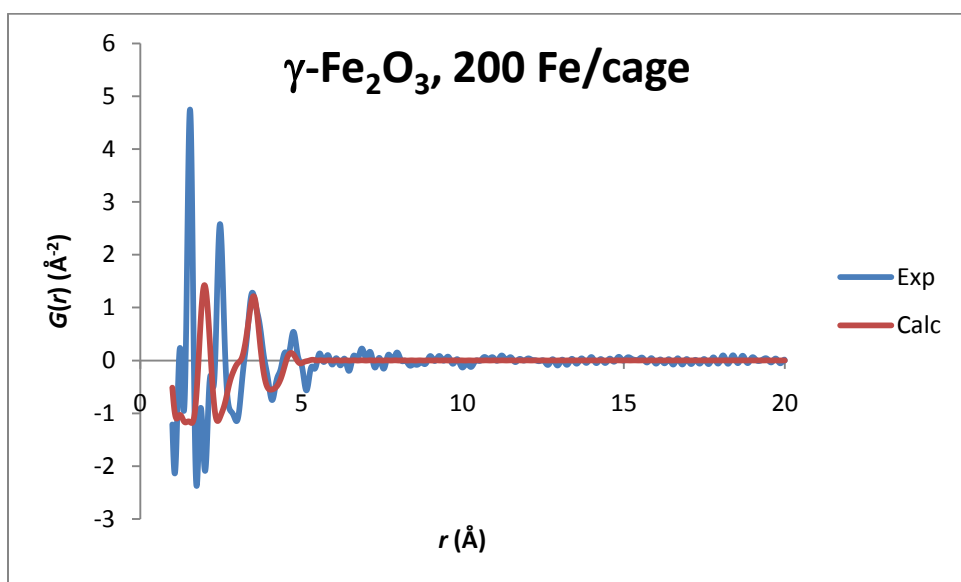


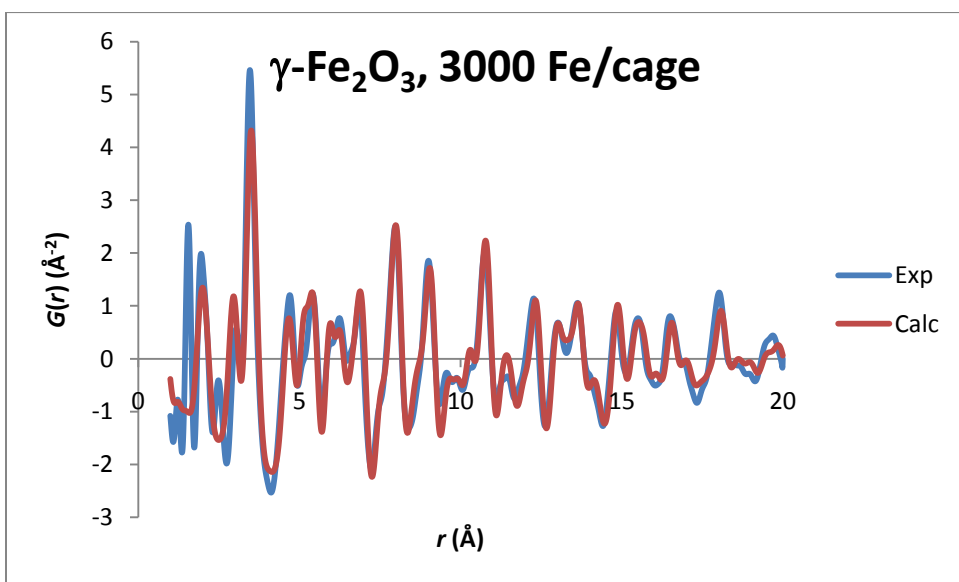
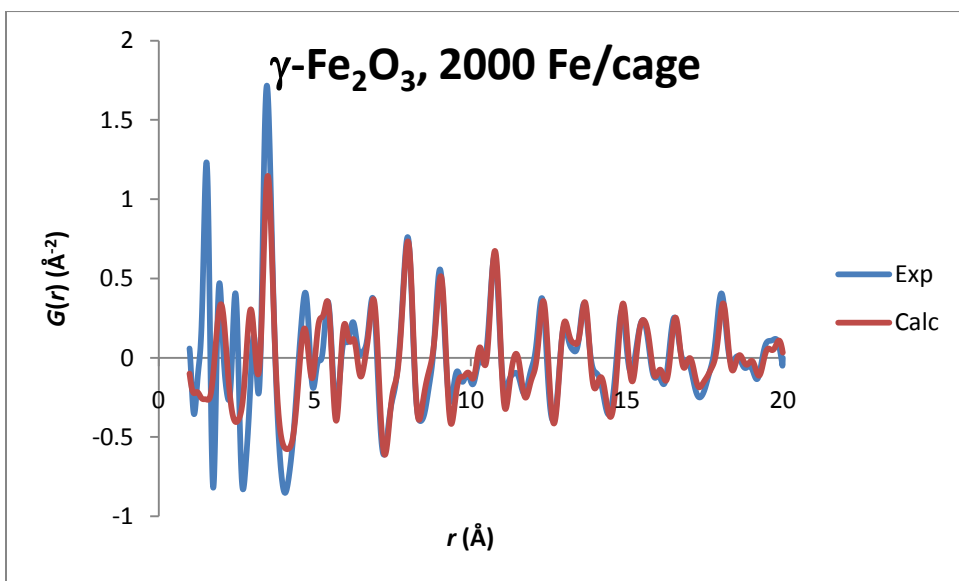
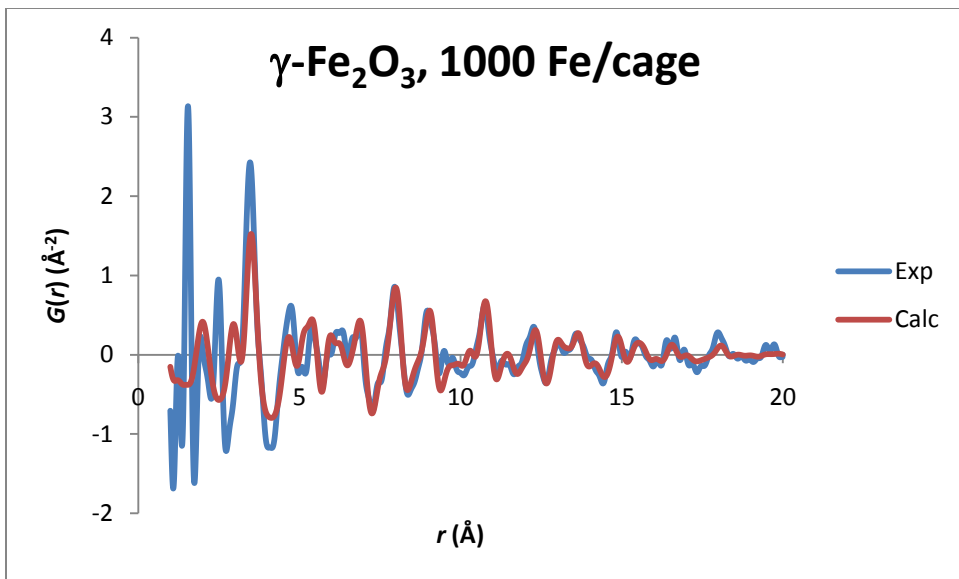
Supporting online material for “Size and crystallinity in protein-templated inorganic nanoparticles”

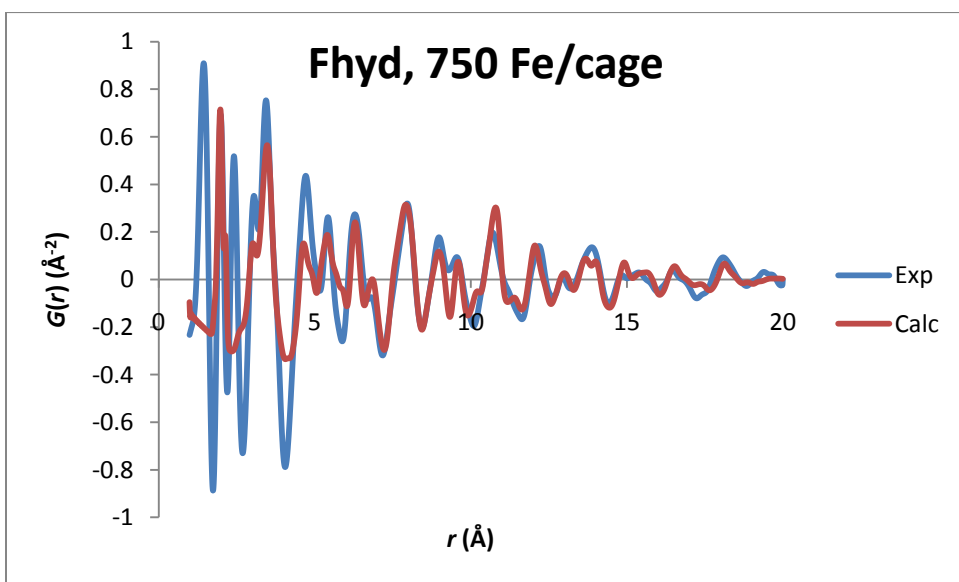
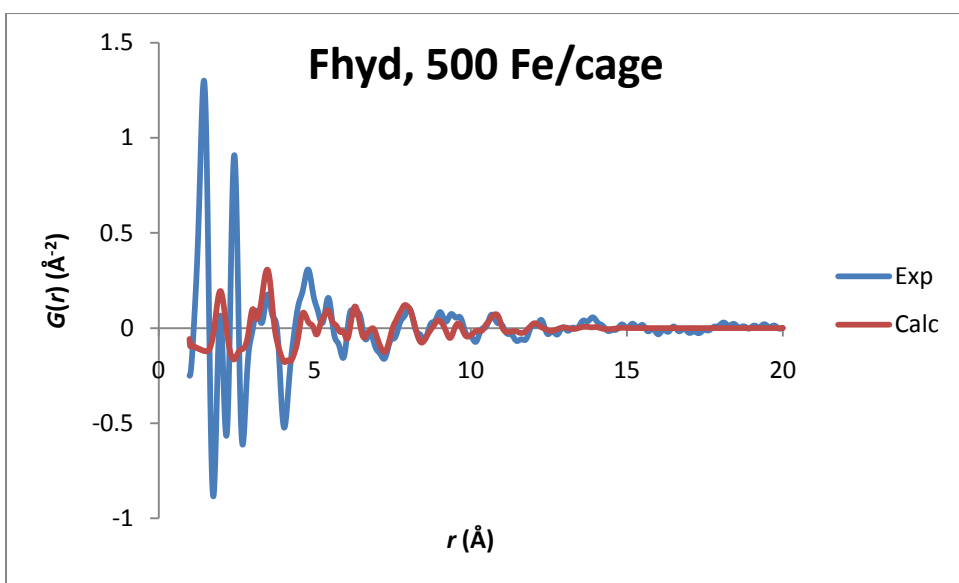
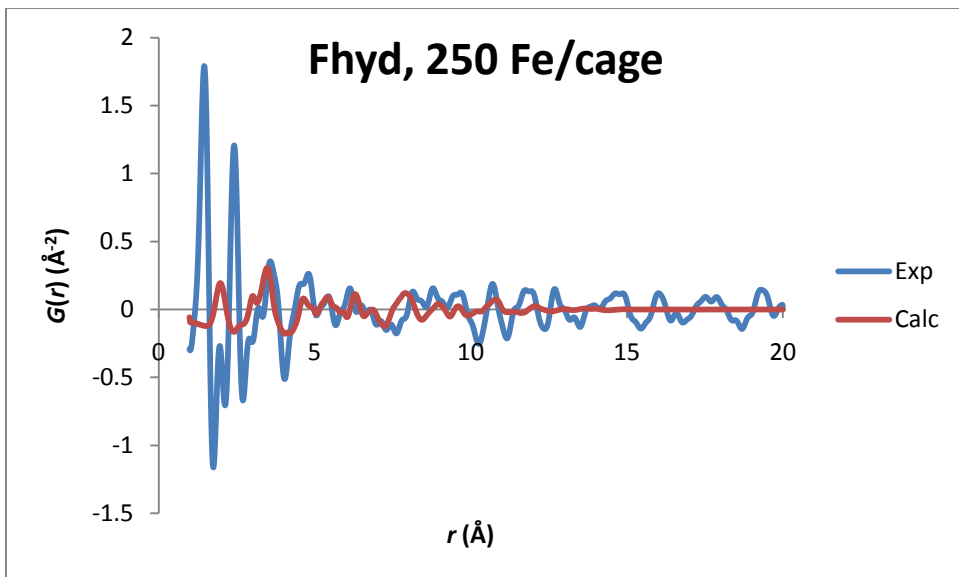
Craig C. Jolley, Masaki Uchida, Courtney Reichhardt, Richard Harrington, Sebyung Kang, Michael Klem, John B. Parise, Trevor Douglas

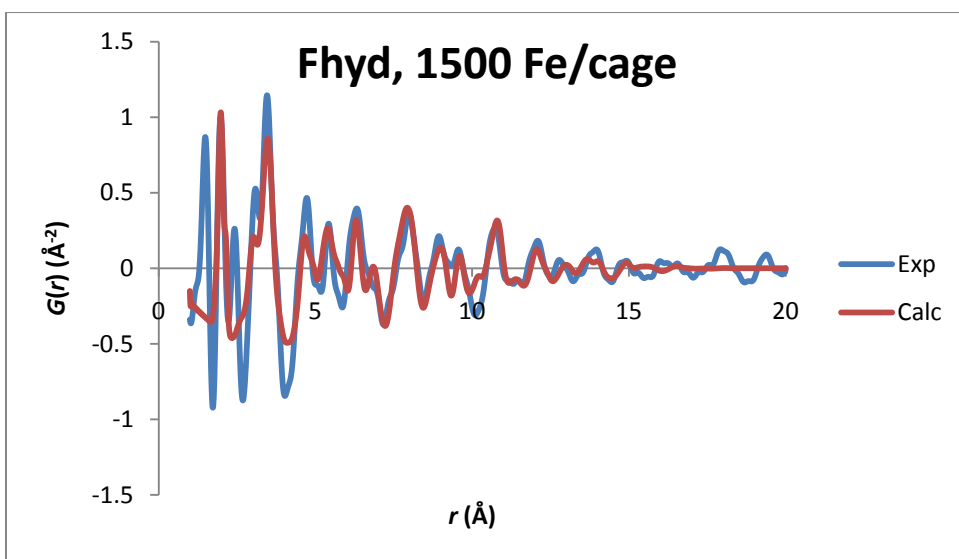
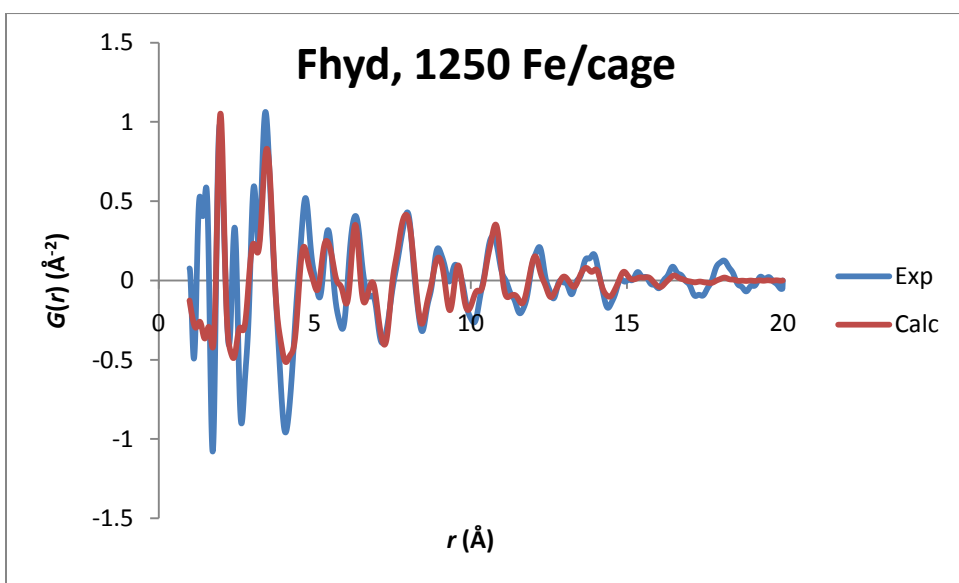
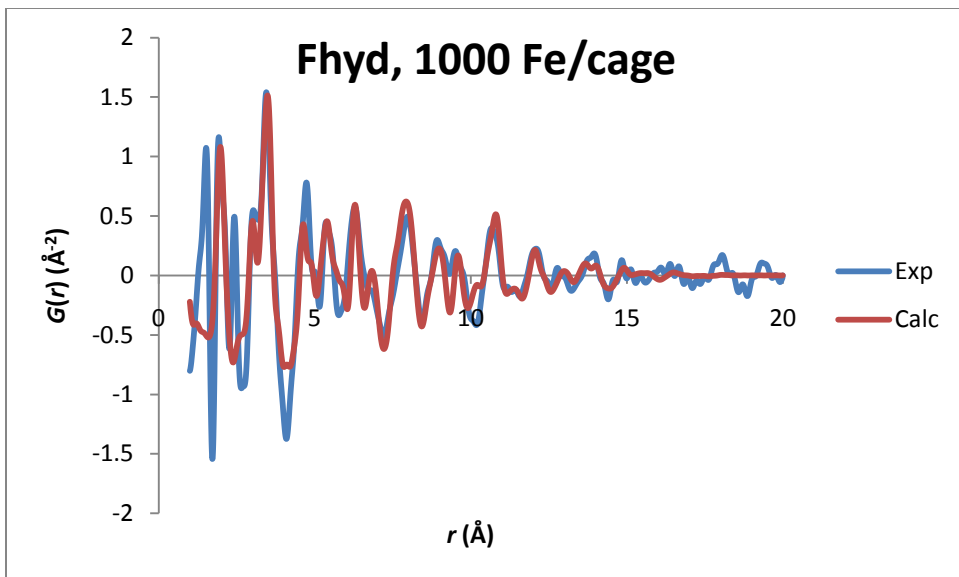
Pair Distribution Function plots

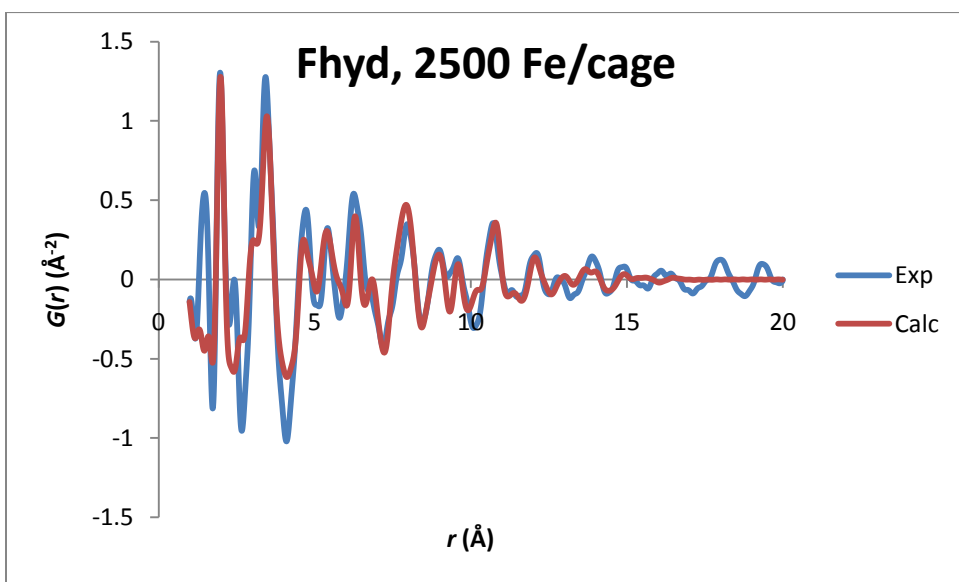
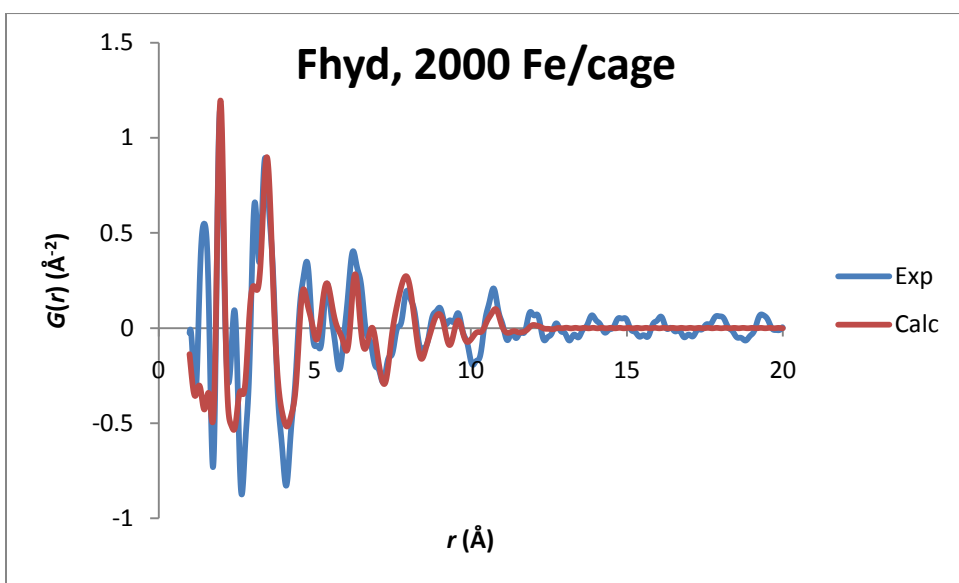
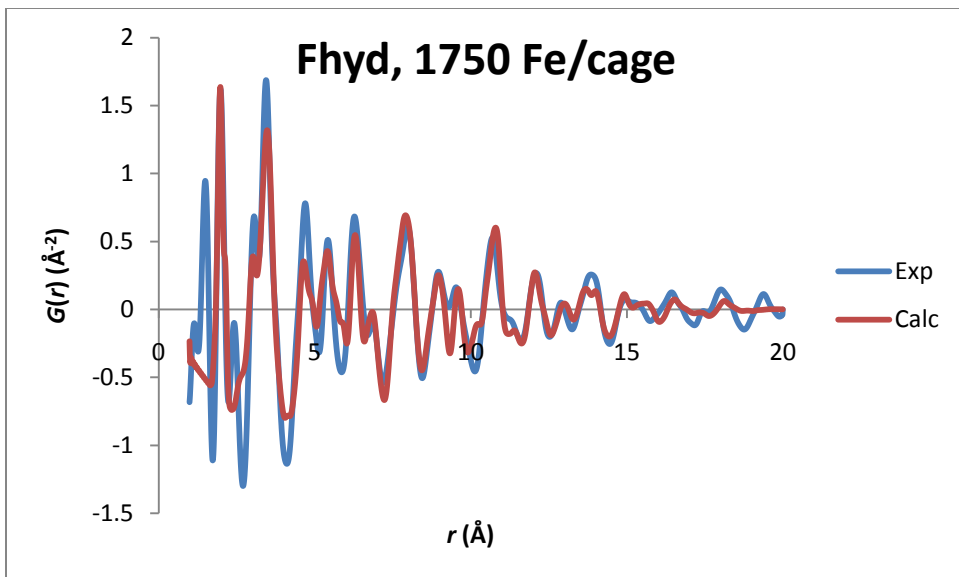
Some of the PDFs illustrated below are included in Figure 1 of the main text; the coherent domain sizes obtained from them are included in Figure 2. The peaks at 1.5 Å and 2.5 Å arising from covalent bonds within the protein phase are especially prominent in the samples with lower metal loading. Calculated fits were generated using PDFgui¹.

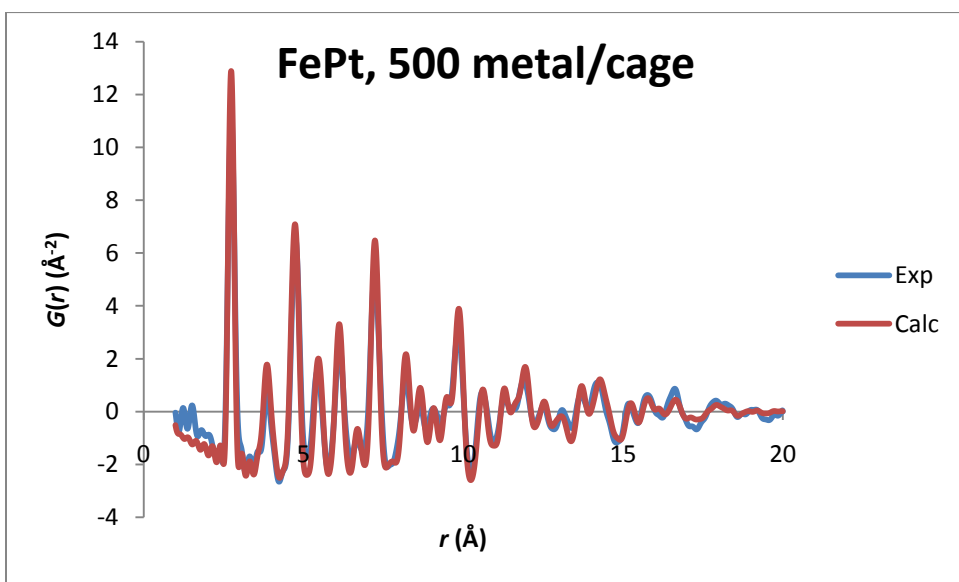
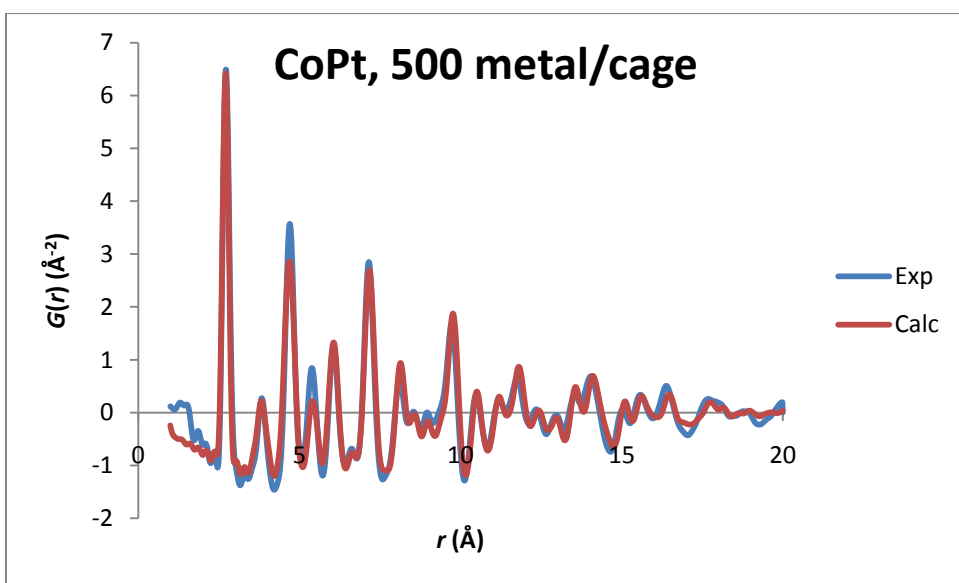
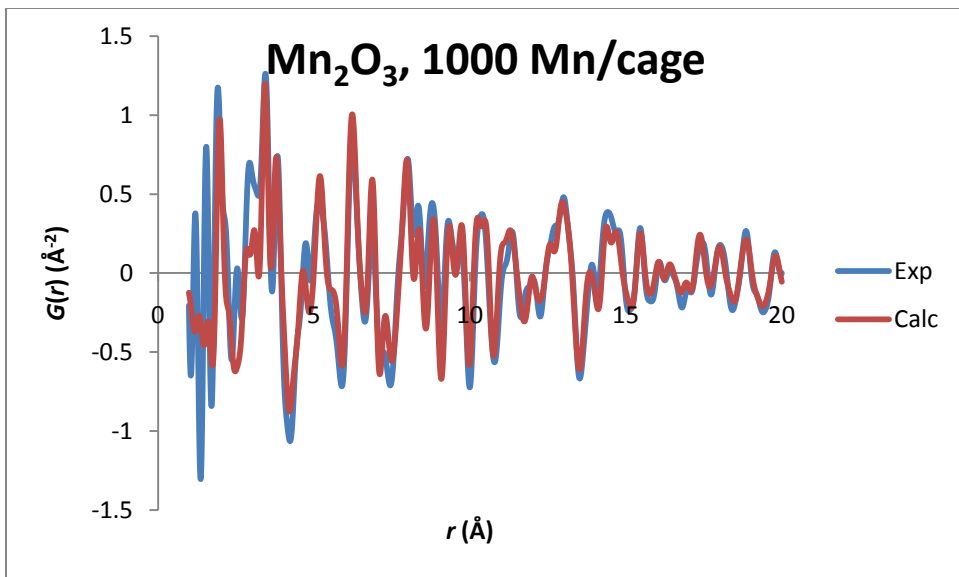




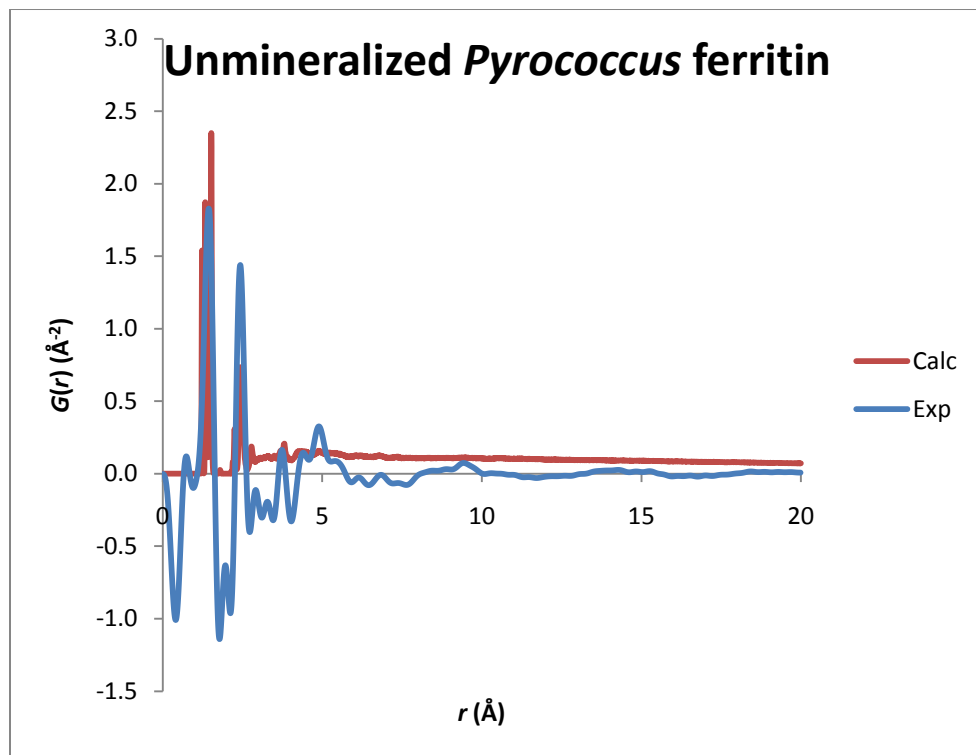








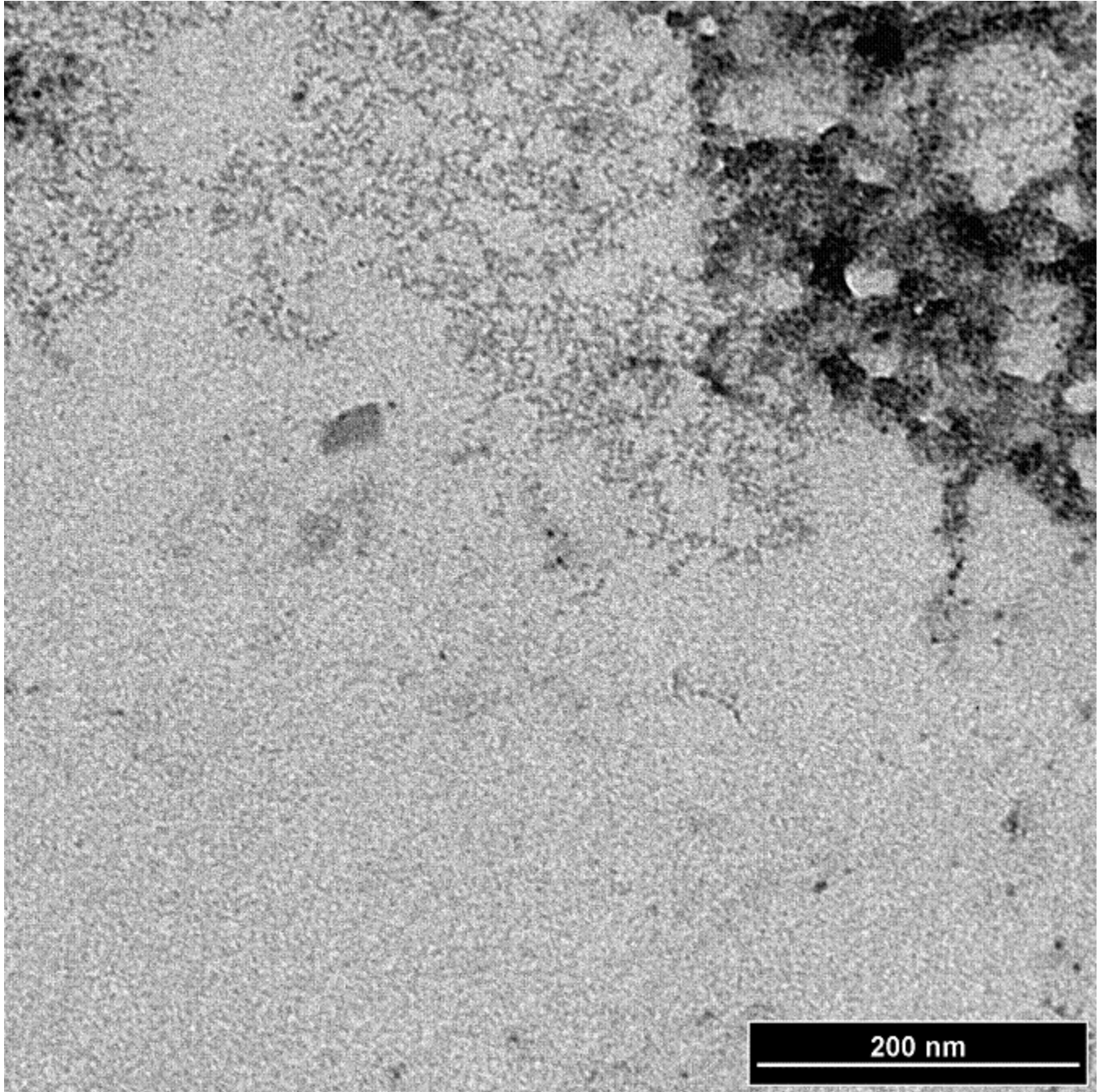
The following PDF was measured using unmineralized lyophilized *P. furiosus* ferritin; the calculated PDF was generated from the protein crystal structure² using the *measure gofr* function in VMD³.



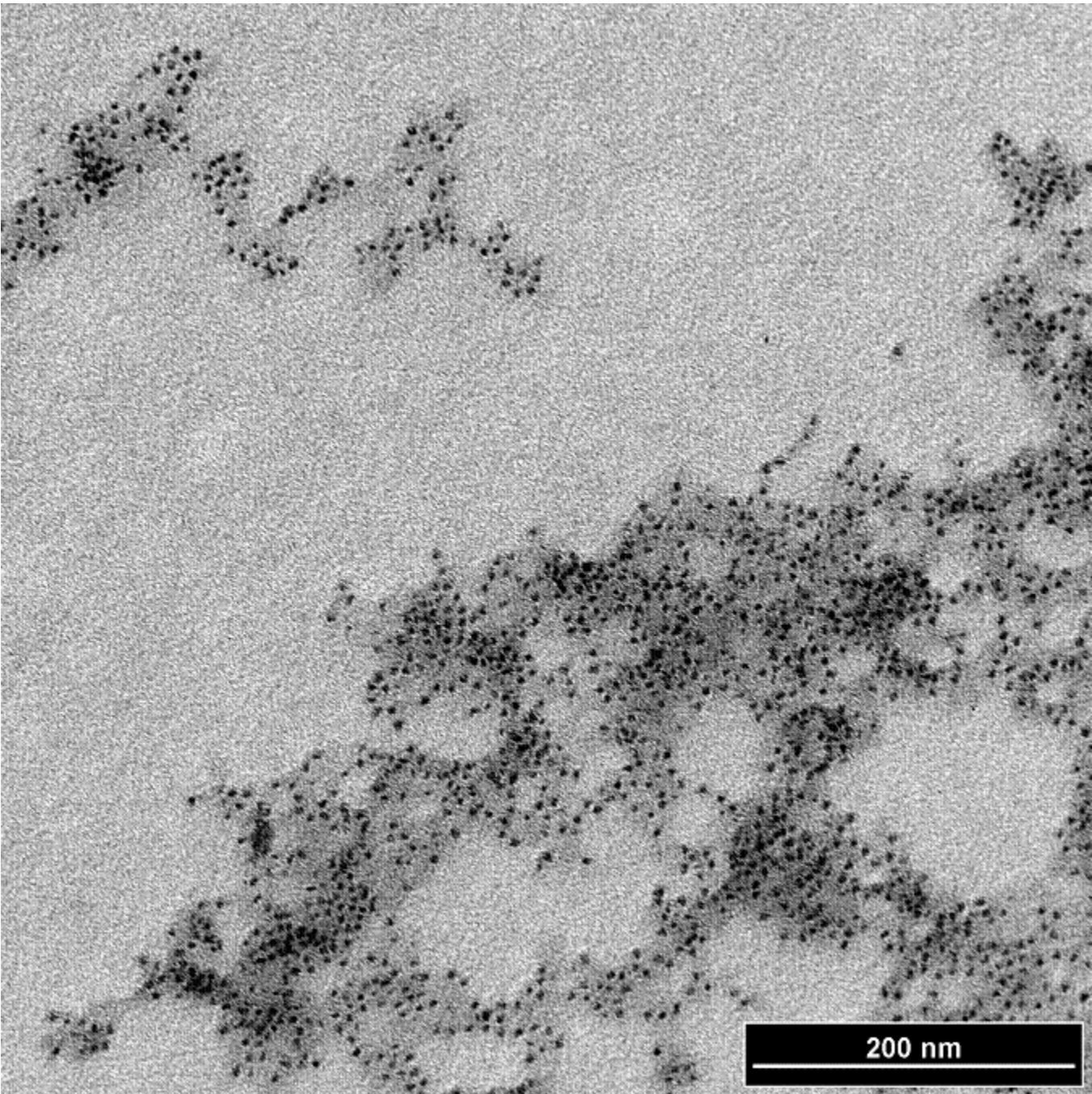
TEM images

All images below are unstained (unless specified otherwise) and show only the inorganic nanoparticles.

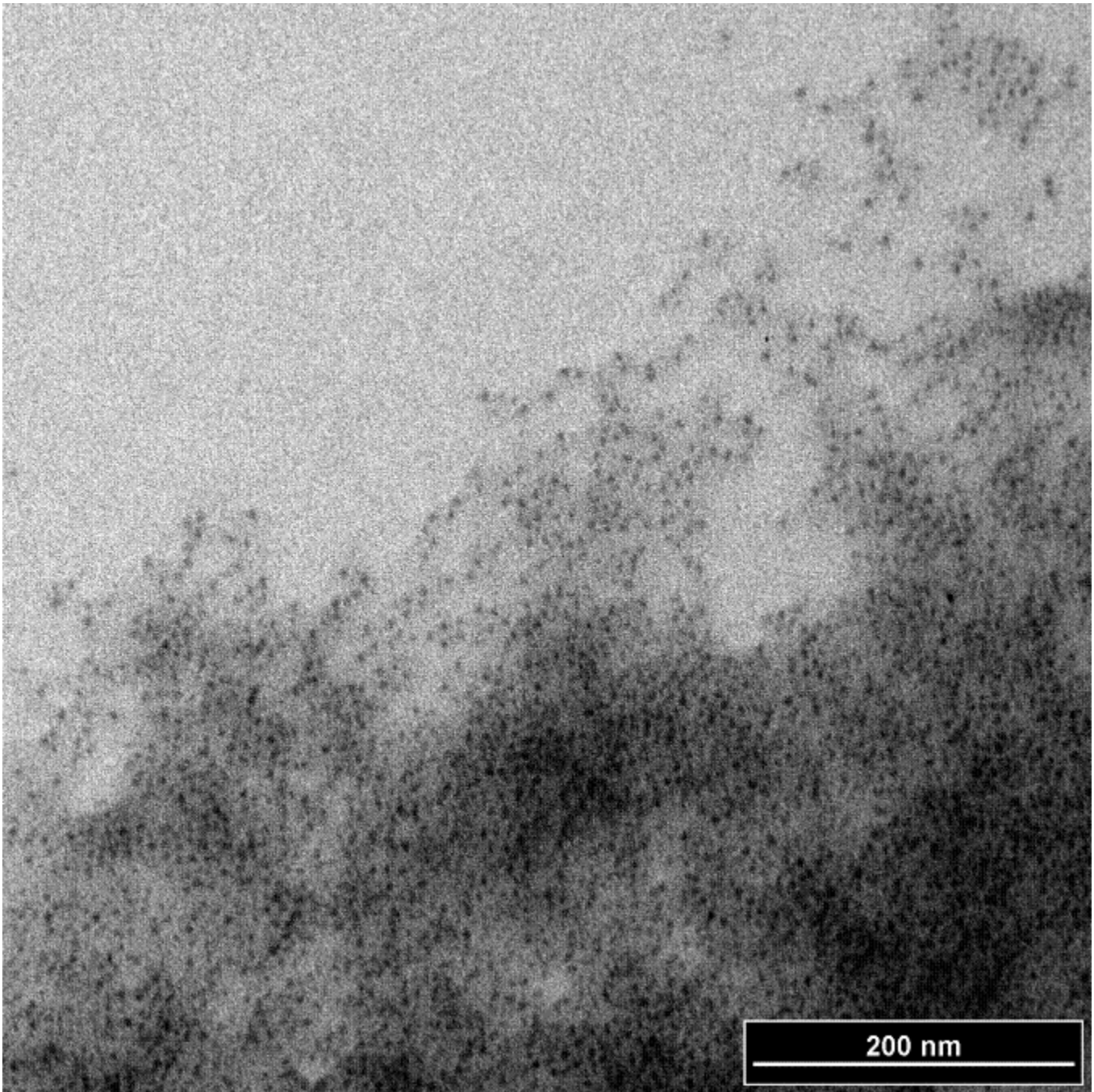
Ferrihydrite in *Pyrococcus* ferritin, 500 Fe/cage – 4.42 ± 0.75 nm (most particles are near the upper right of the image):



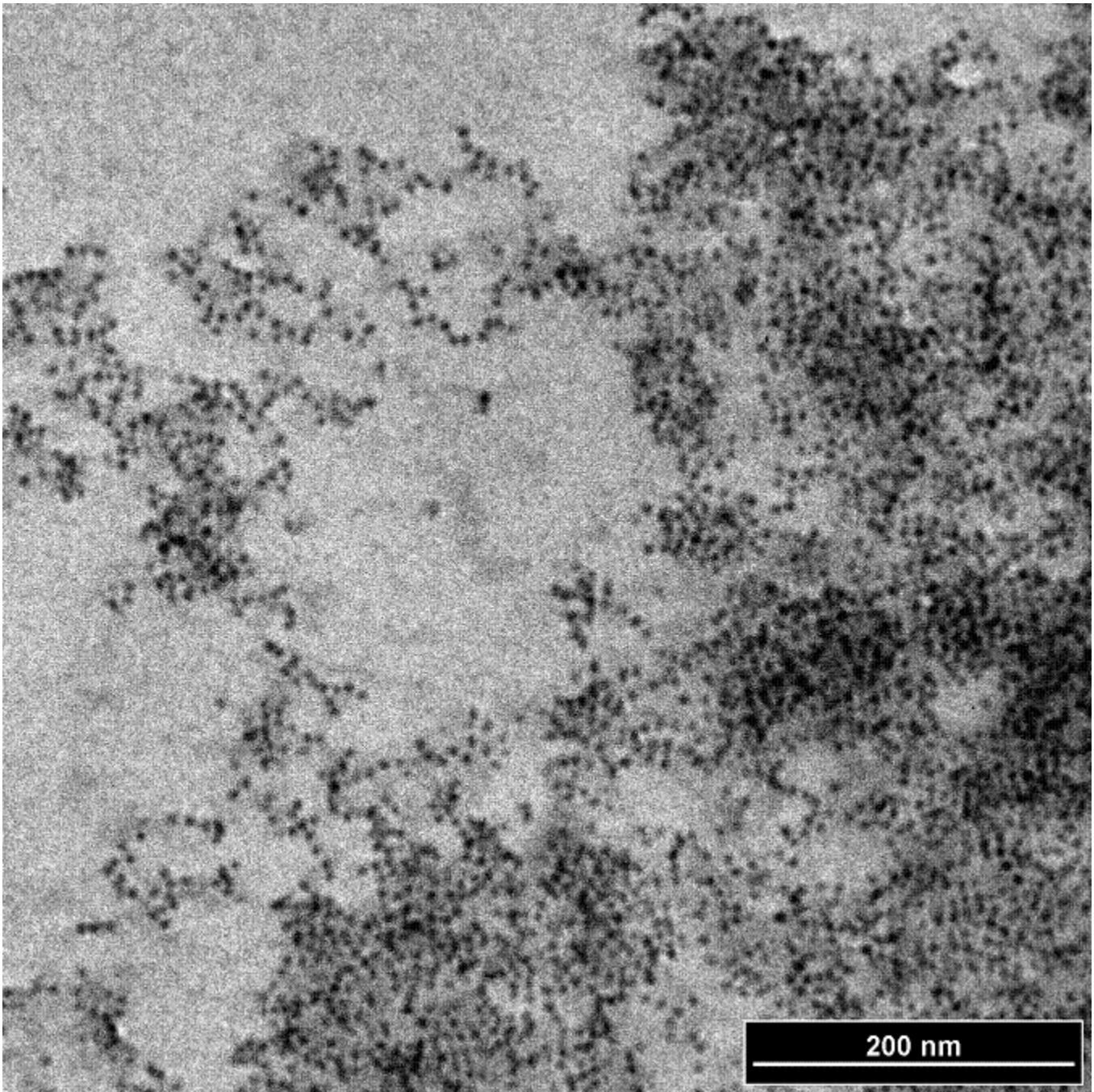
Ferrihydrite in *Pyrococcus* ferritin, 1000 Fe/cage – 5.15 ± 1.10 nm:



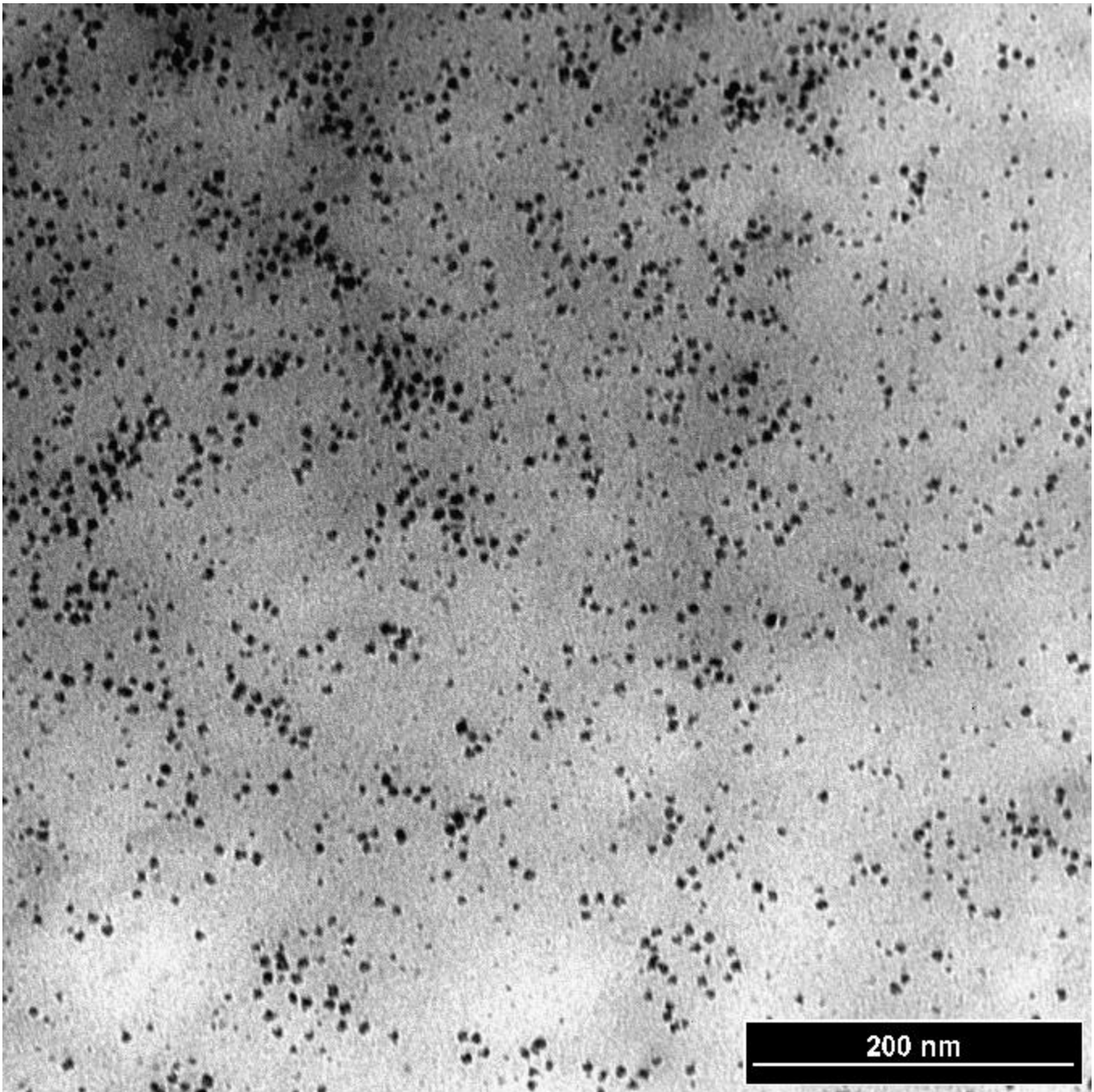
Ferrihydrite in *Pyrococcus* ferritin, 1500 Fe/cage – 5.19 ± 0.92 nm:



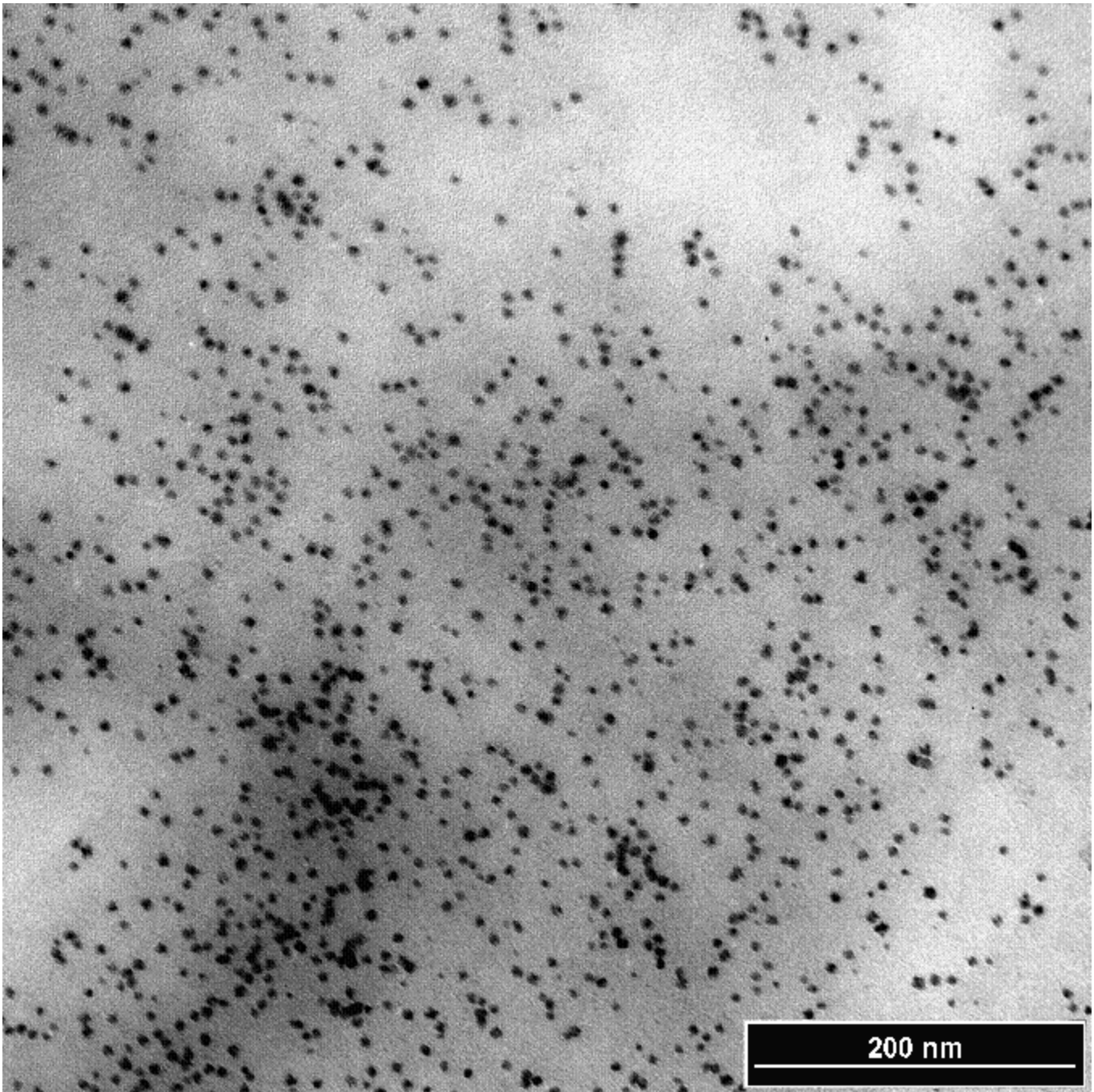
Ferrihydrite in *Pyrococcus* ferritin, 2000 Fe/cage – 6.86 ± 1.03 nm:



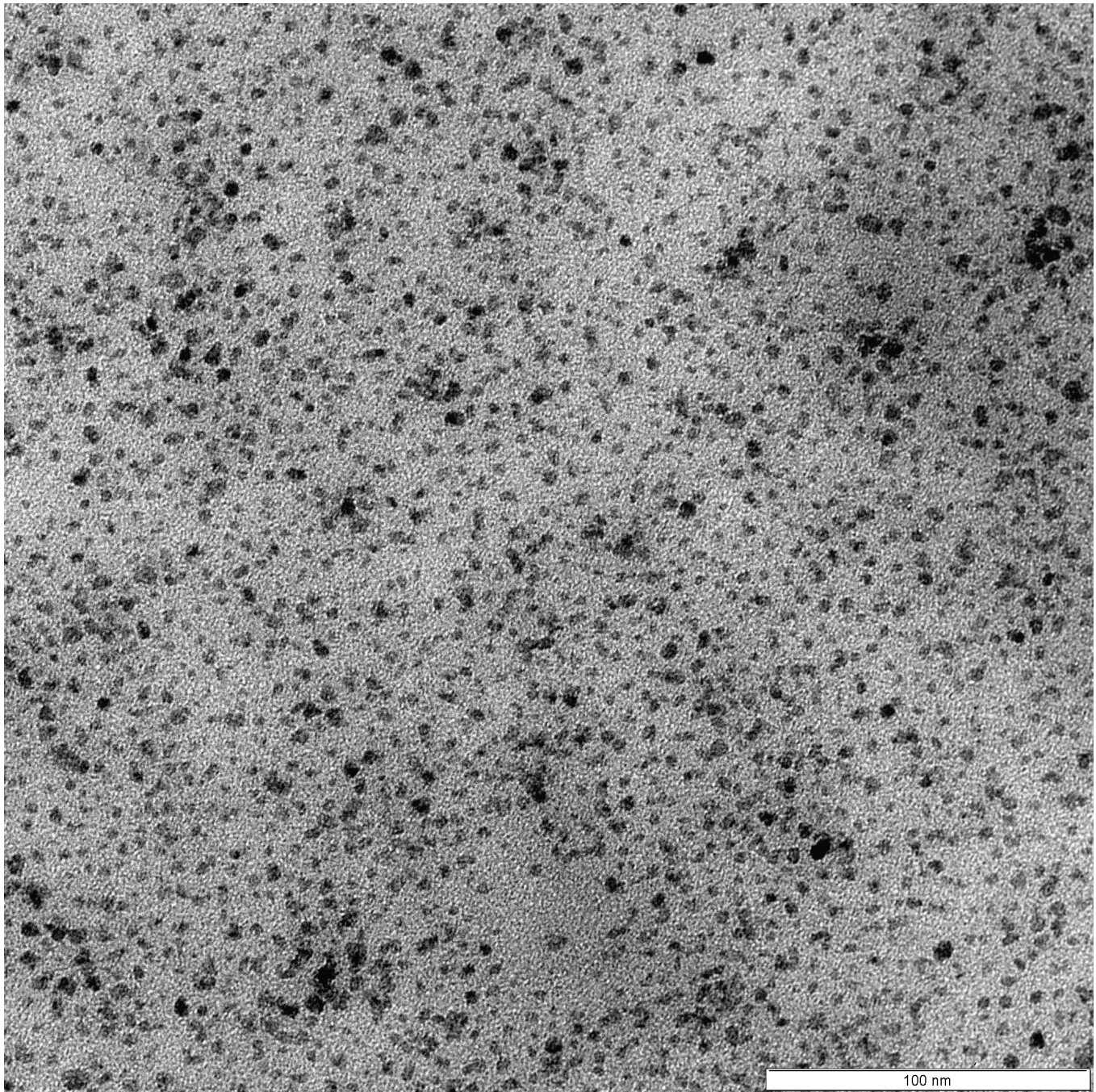
FePt in *Pyrococcus* ferritin – 6.75 ± 1.27 nm:



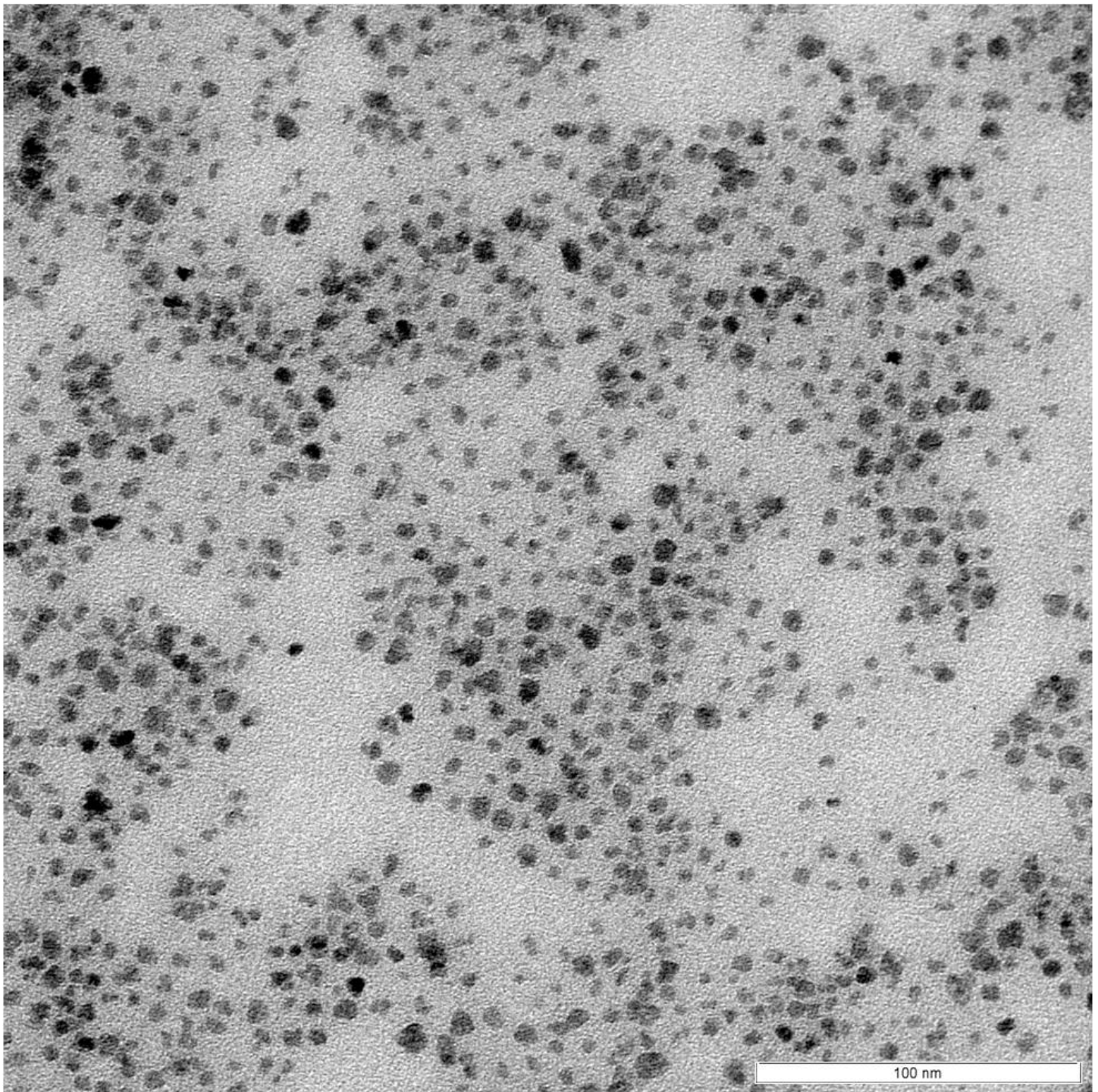
CoPt in *Pyrococcus* ferritin – 7.14 ± 0.73 nm:



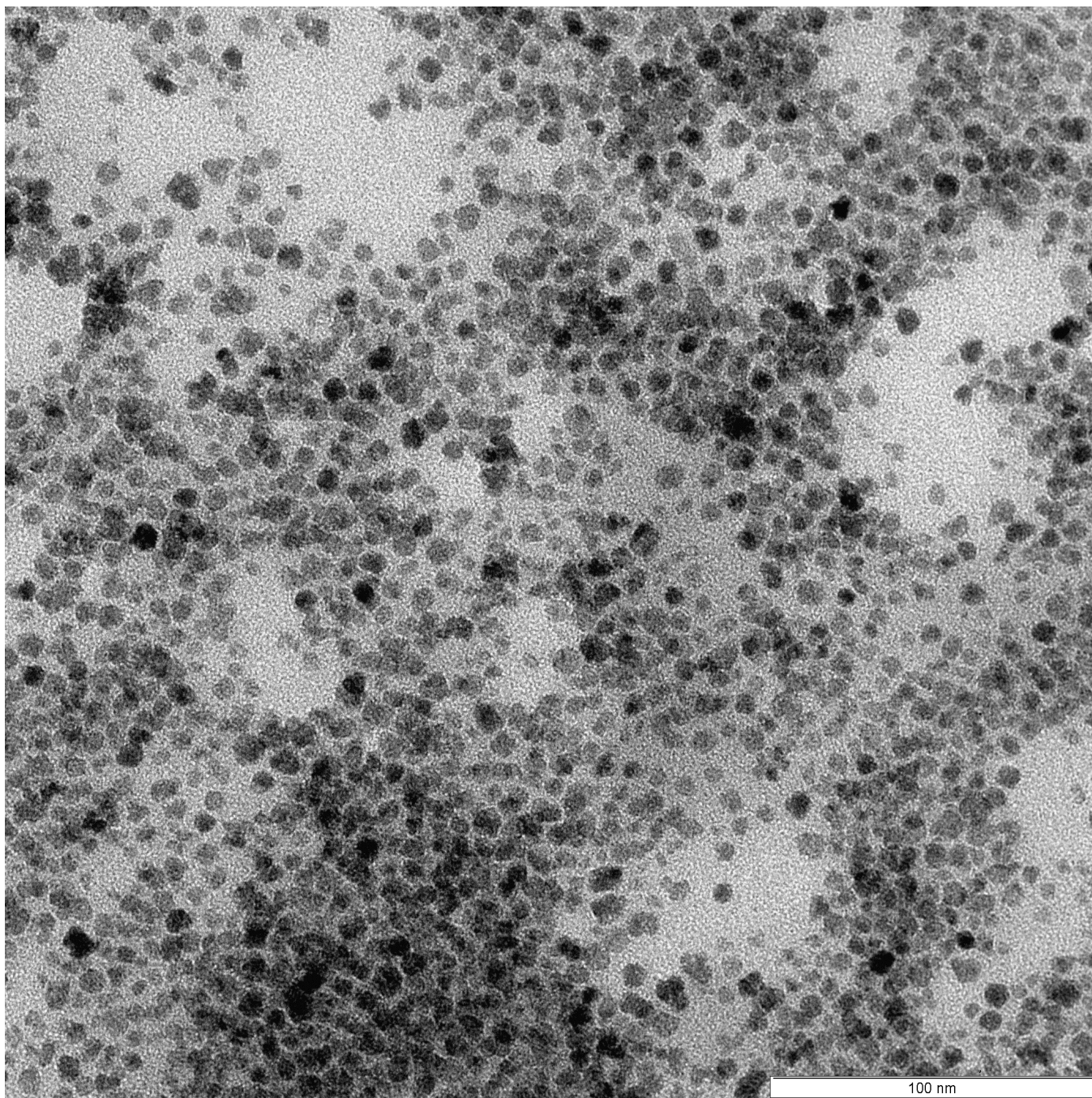
$\gamma\text{-Fe}_2\text{O}_3$ in human ferritin, 1000 Fe/cage – 3.6 ± 0.7 nm:



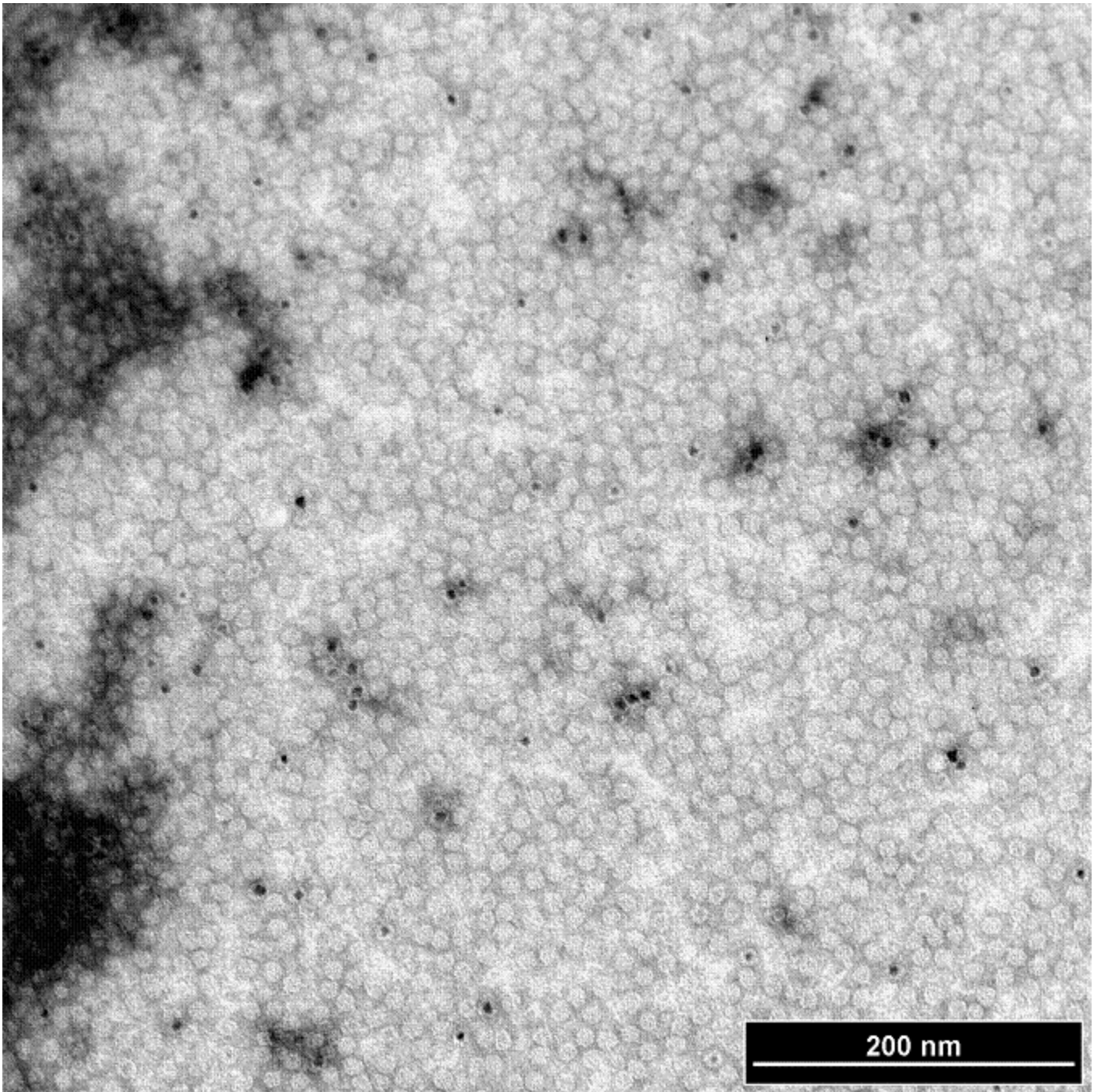
γ -Fe₂O₃ in human ferritin, 3000 Fe/cage – 5.1 ± 0.9 nm:



$\gamma\text{-Fe}_2\text{O}_3$ in human ferritin, 5000 Fe/cage – 5.9 ± 0.9 nm:



CoPt in *Pyrococcus* ferritin, stained with uranyl acetate to show protein – 12.67 ± 0.90 nm.



References

1. Farrow, C. L.; Juhas, P.; Liu, J. W.; Bryndin, D.; Bozin, E. S.; Bloch, J.; Proffen, T.; Billinge, S. J. L., PDFfit2 and PDFgui: computer programs for studying nanostructure in crystals. *Journal of Physics-Condensed Matter* **2007**, *19*, (33), -.
2. Tatur, J.; Hagen, W. R.; Matias, P. M., Crystal structure of the ferritin from the hyperthermophilic archaeal anaerobe *Pyrococcus furiosus*. *J Biol Inorg Chem* **2007**, *12*, (5), 615-30.
3. Humphrey, W.; Dalke, A.; Schulten, K., VMD: visual molecular dynamics. *J Mol Graph* **1996**, *14*, (1), 33-8, 27-8.