

Supplementary Information for

Real-Time 3D Analysis During Electron Tomography using tomviz

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S1 Real-Time Cryo Electron Tomography Demonstration on a Cd-Cys Nanoparticle

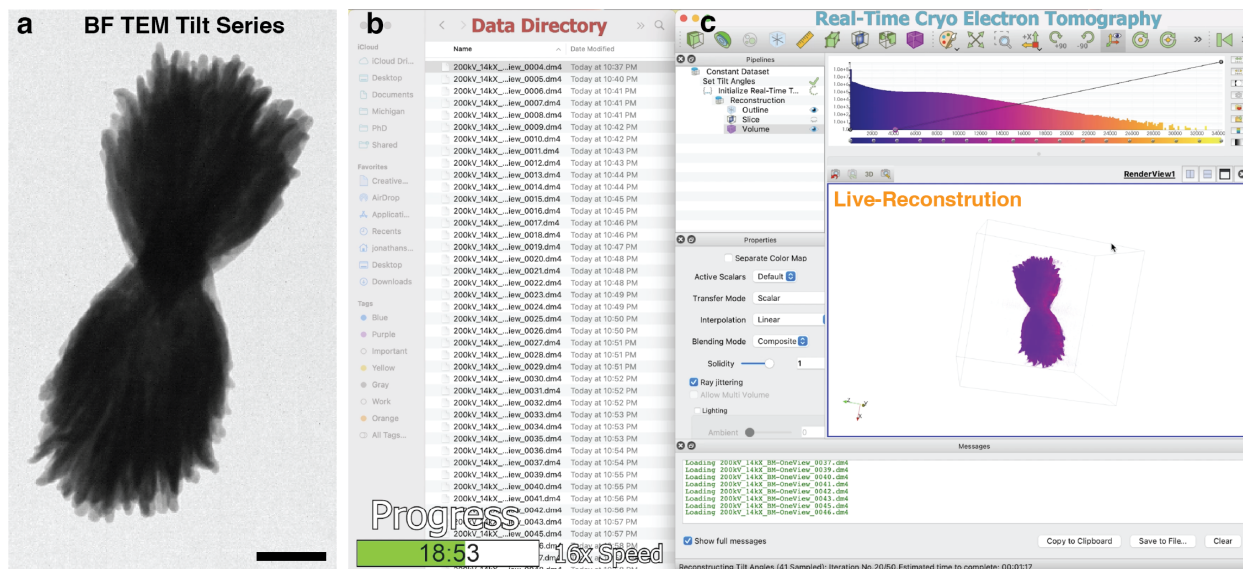


Fig. S1 | a) Bright field projection images collected during the real-time cryo electron tomography experiment. Scale bar, 500 nm. b-c) A screenshot from Supplementary Video 6 demonstrating an experimental real-time cryo-electron tomography reconstruction. The data directory indicates when a new projection images was collected from the microscope, which is intermittently read by tomviz for processing.

S2 Real-Time Simulation for the Raw FePt Nanoparticle

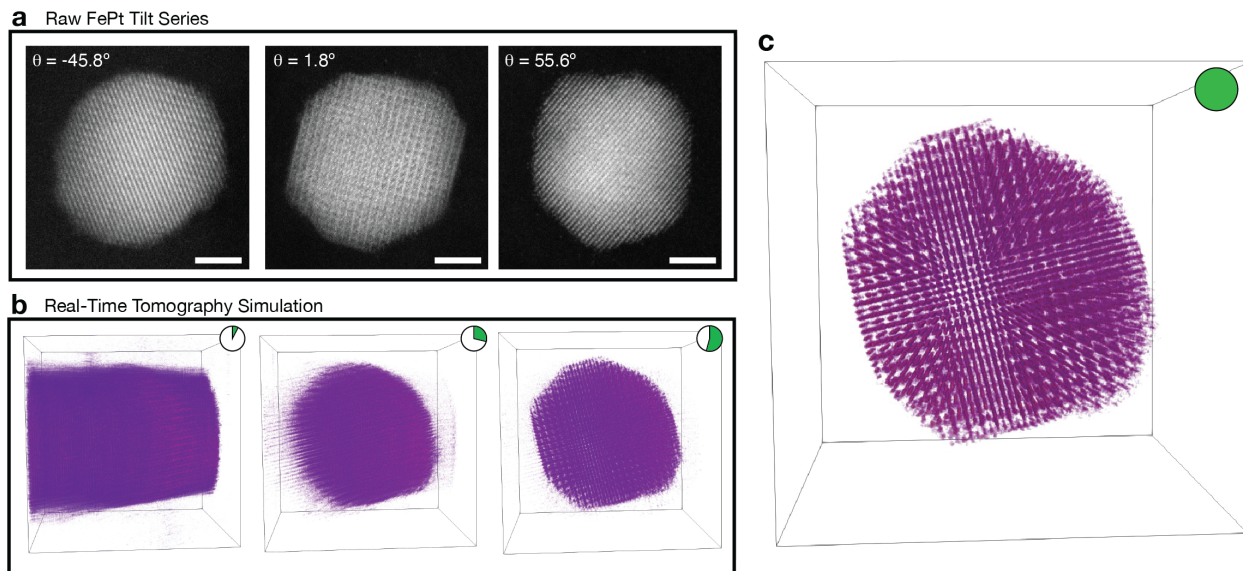


Fig. S2 | a) The raw FePt tomographic projection images used for the real-time tomography simulation. Scale bar, 2 nm. b) As the simulation progresses, the reconstruction quality improves and atoms become visible as early as 50% of the experiment. c) An atomic-resolution tomogram is available after all the projections are reconstructed.

S3 Comparison of center of mass alignment and cross correlation for non-isolated objects

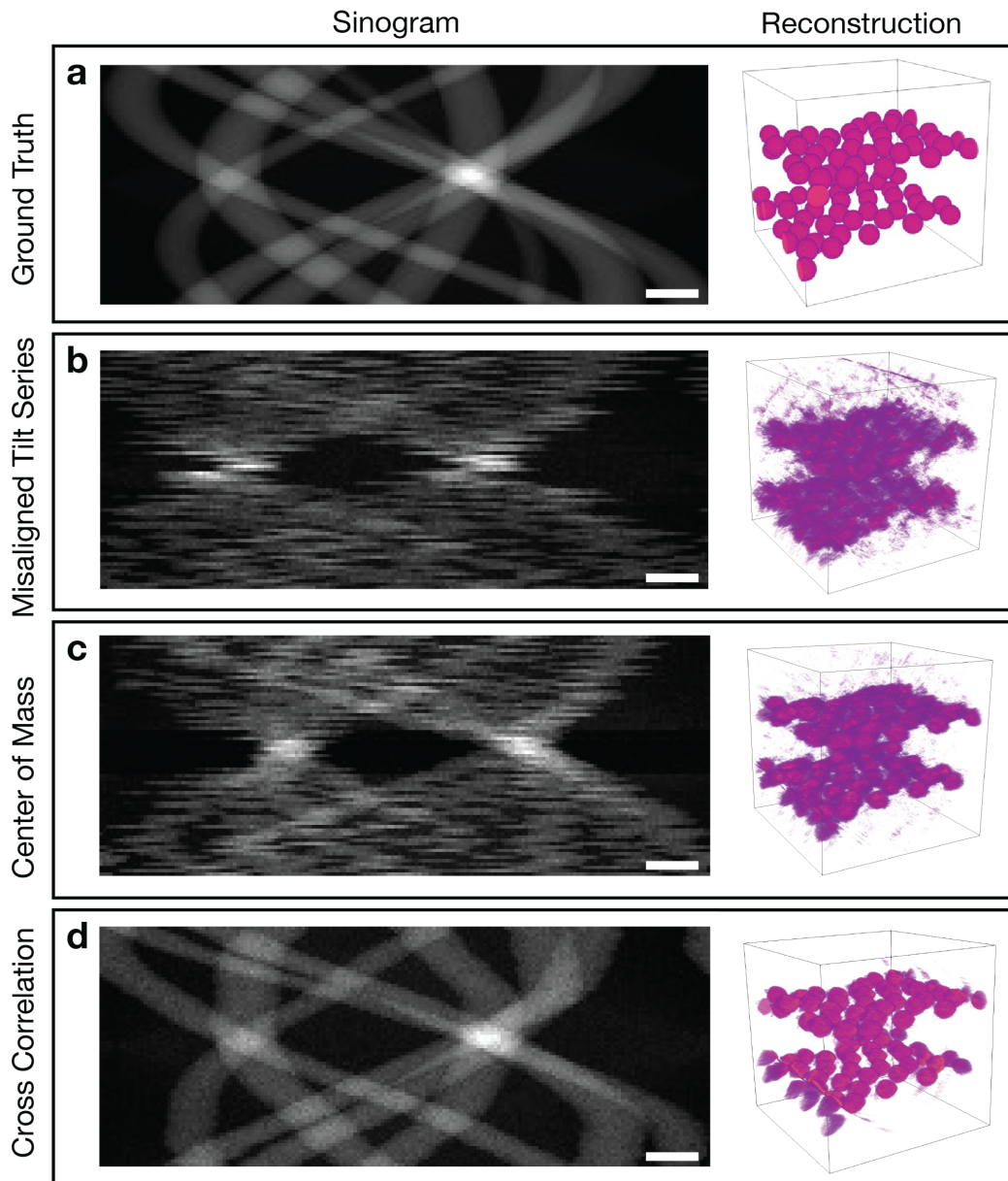


Fig. S3 | a) The phantom test object consisting two layers of nanoparticles inspired by an experimental Fe_3O_4 material system. b) The sinogram that corrupted by Poisson noise and misaligned by random translational image shifts. c-d) The sinograms aligned by center of mass and cross correlation and its resulting reconstructions. Scale bar, 10 nm.