

SUPPORTING INFORMATION

Figure S1 TEM of sample 02 discharged at 200mV at different enlargements.

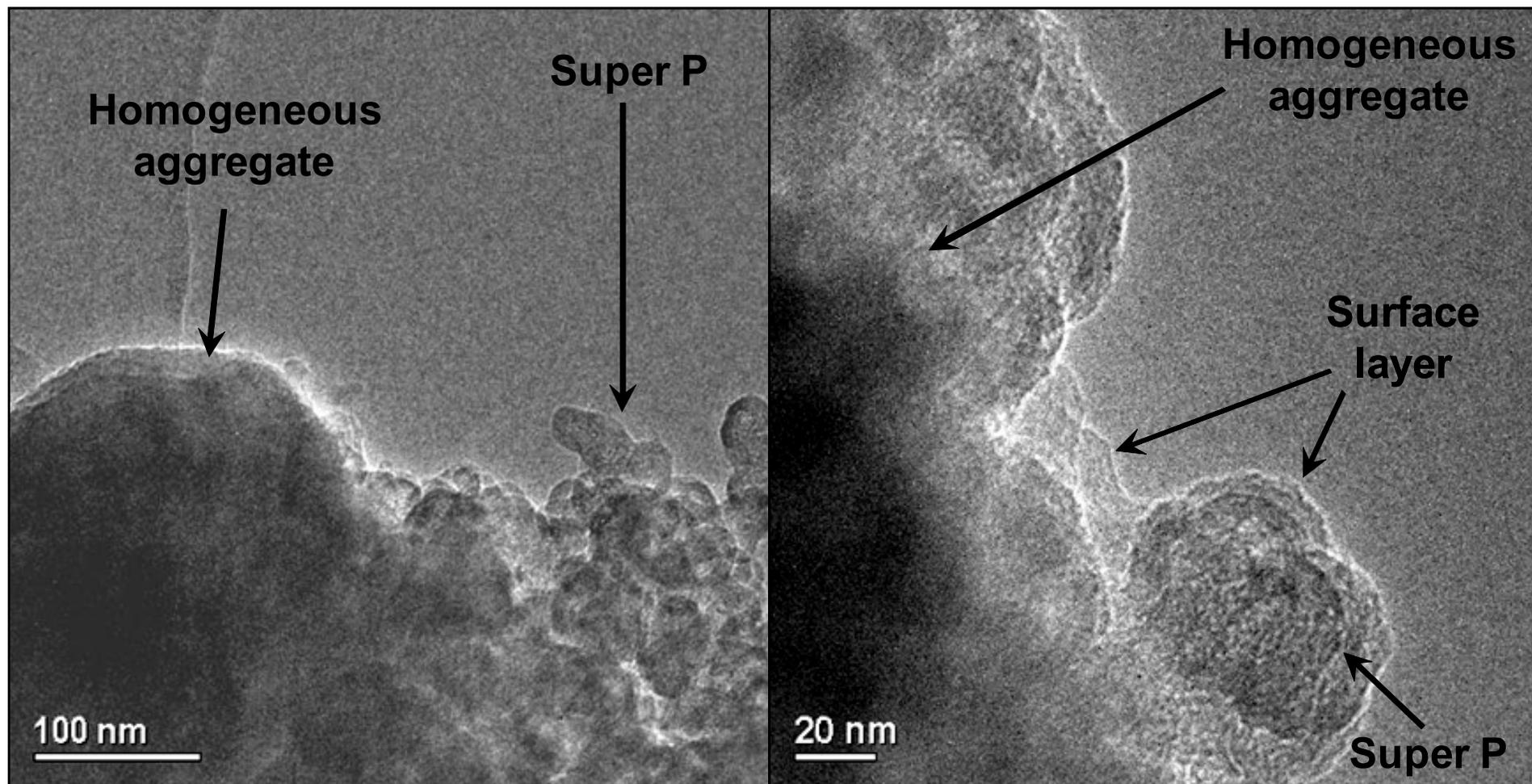


Figure S2: TEM of sample 02 discharged at 0V at different enlargements (the inset shows the FFT of the hcp MgLi_x nano particle HRTEM domain; $\alpha=28.6^\circ$; (0001) 5.2 Å; (0002) 2.6 Å; (01-10) 2.8 Å; (01-1-1) 2.5 Å; M/L=1.15; N/L=1.09; plane perpendicular to [2-1-10]).

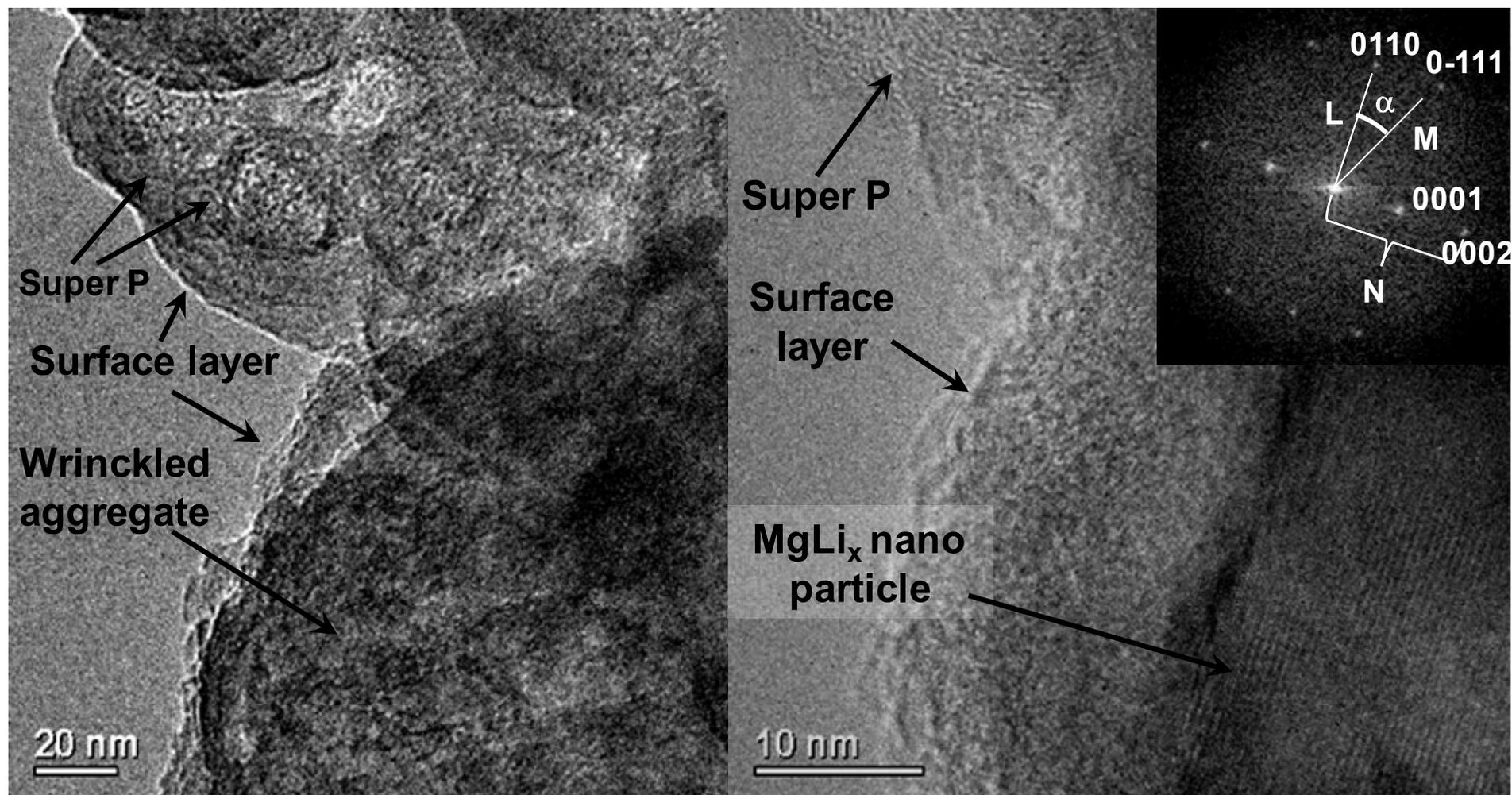


Figure S3: TEM of sample 02 at 2.5V, after a whole galvanostatic cycle at different enlargements.

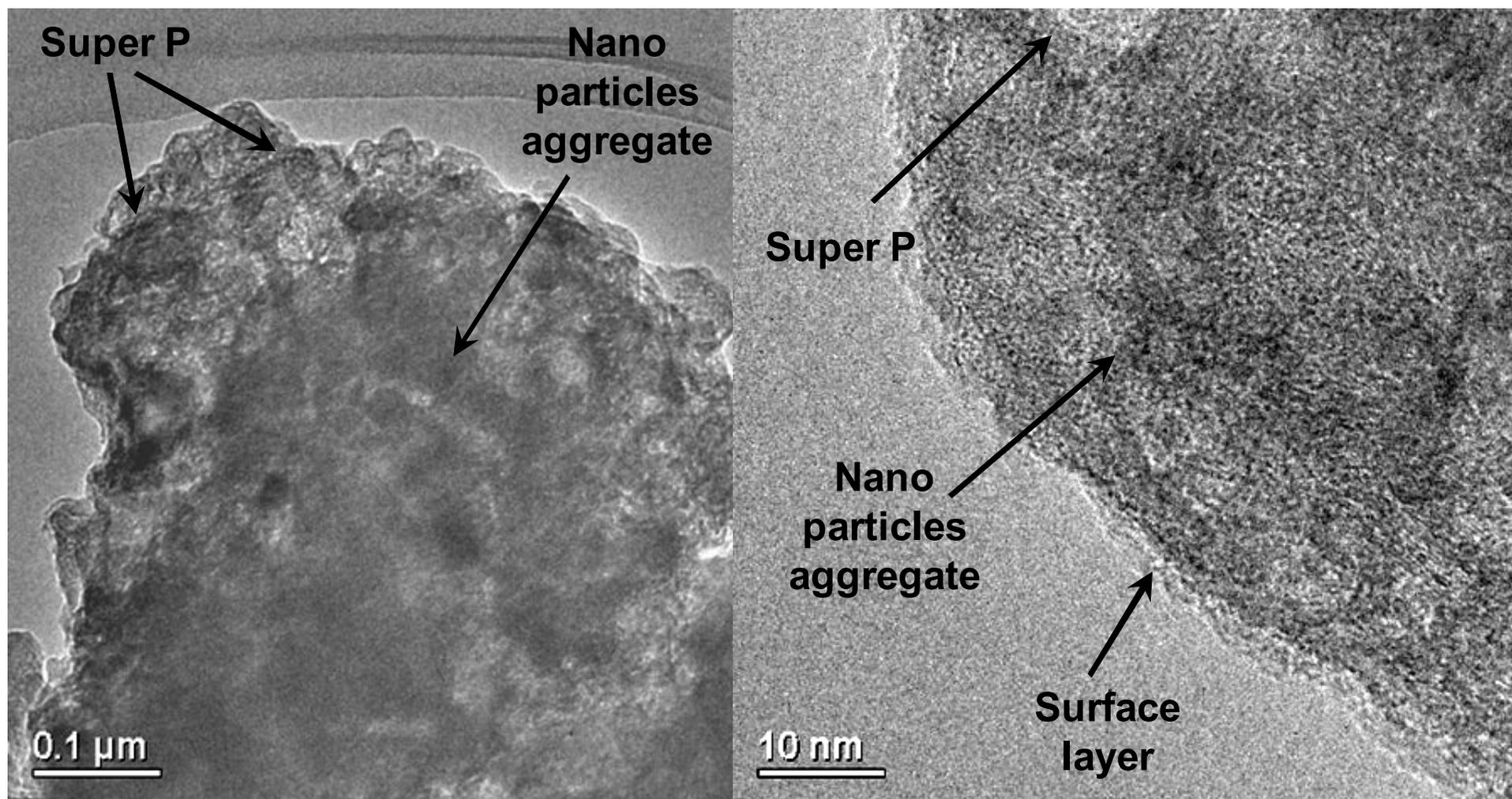


Figure S4: Galvanostatic first cycle voltage profile of sample 02 upon different current density, in the voltage range 0.2-2.5V.

