Electronic Supplementary Information:

Nanostructural transformations during the reduction of hollow and porous nickel oxide Nanoparticles

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Additional TEM images Ni nanoparticles at different stages of oxidation and reduction:

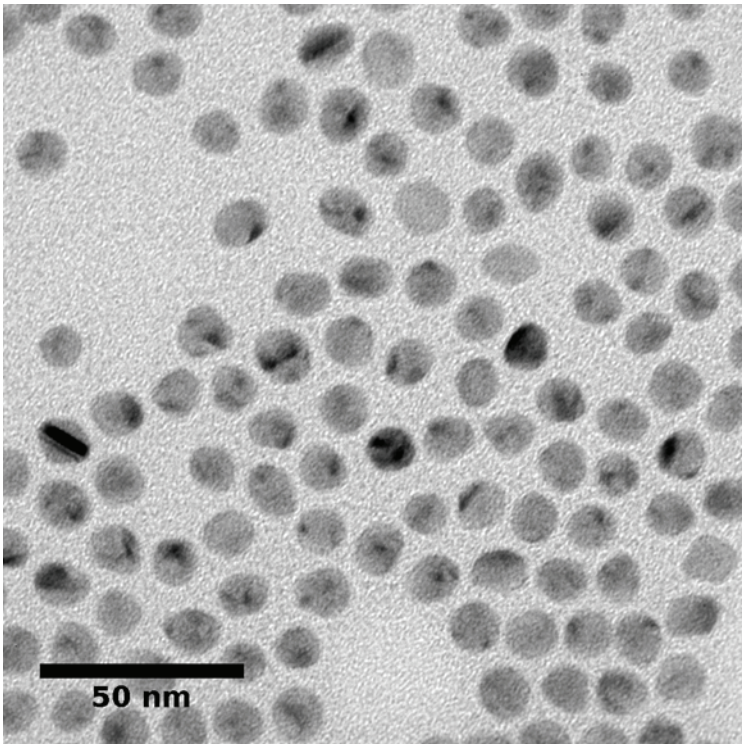

Figure S1. TEM image of the Ni12 sample before any treatment.

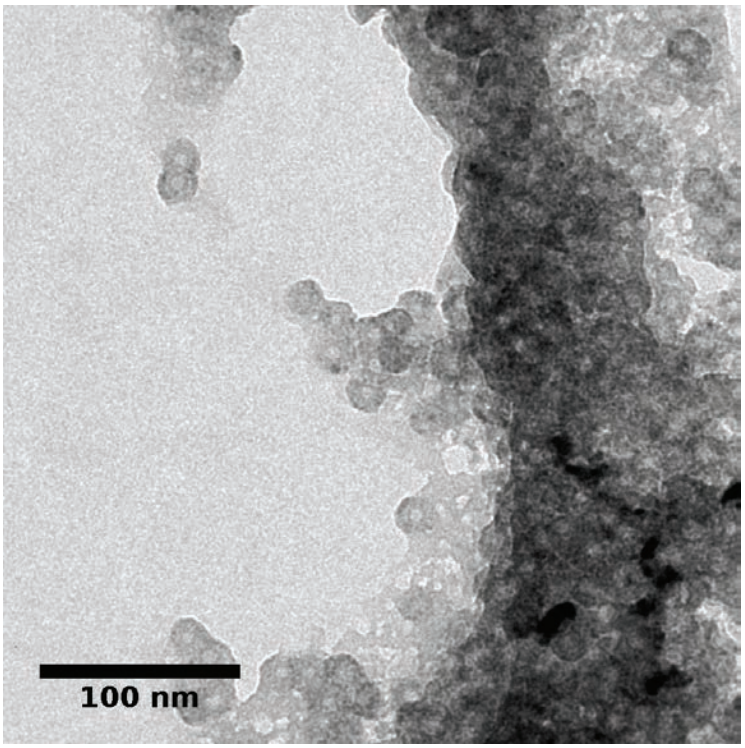

Figure S2. TEM image of the Ni12 sample after oxidation at 500 °C for 1 hour.

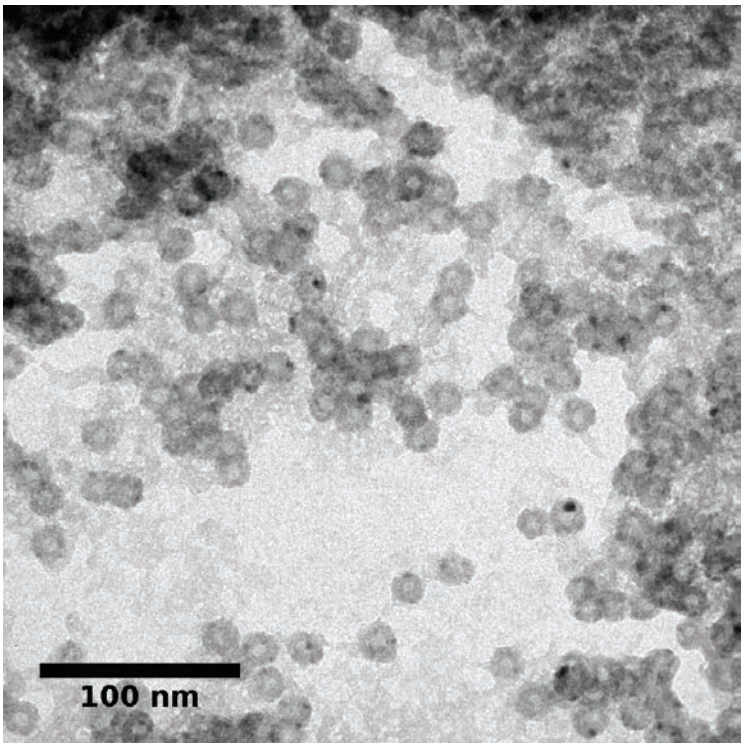

Figure S3. TEM image of the Ni12 sample after oxidation and reduction at 350 °C for 1 hour.

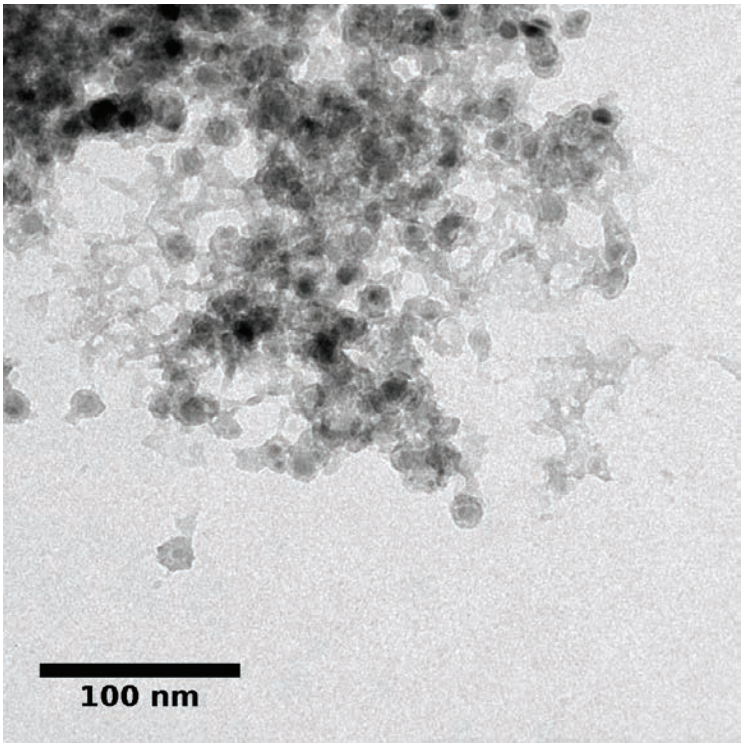

Figure S4. TEM image of the Ni12 sample after oxidation and reduction at 350 °C for 2 hours.

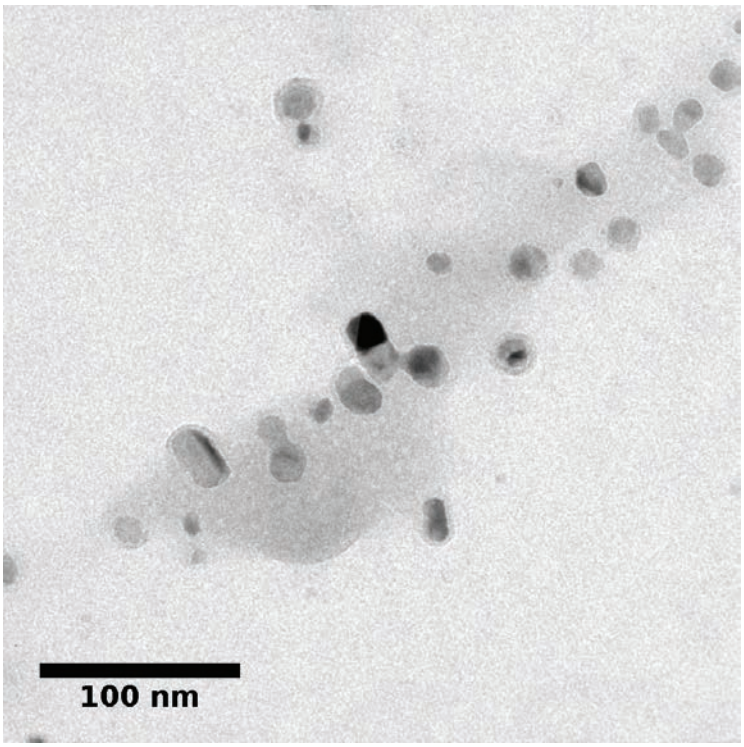

Figure S5. TEM image of the Ni12 sample after oxidation and reduction at 350 °C for 4 hours.

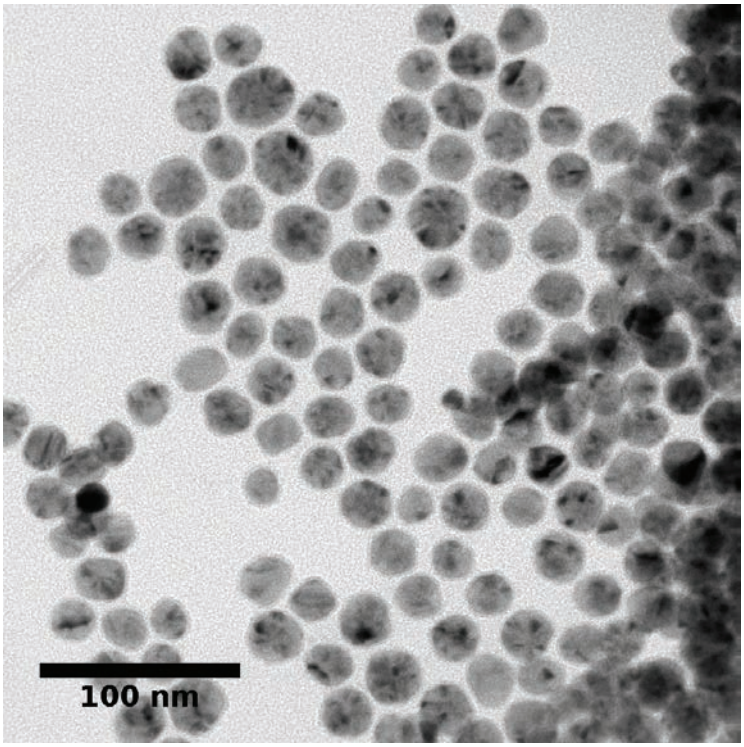

Figure S6. TEM image of the Ni24 sample before any treatment.

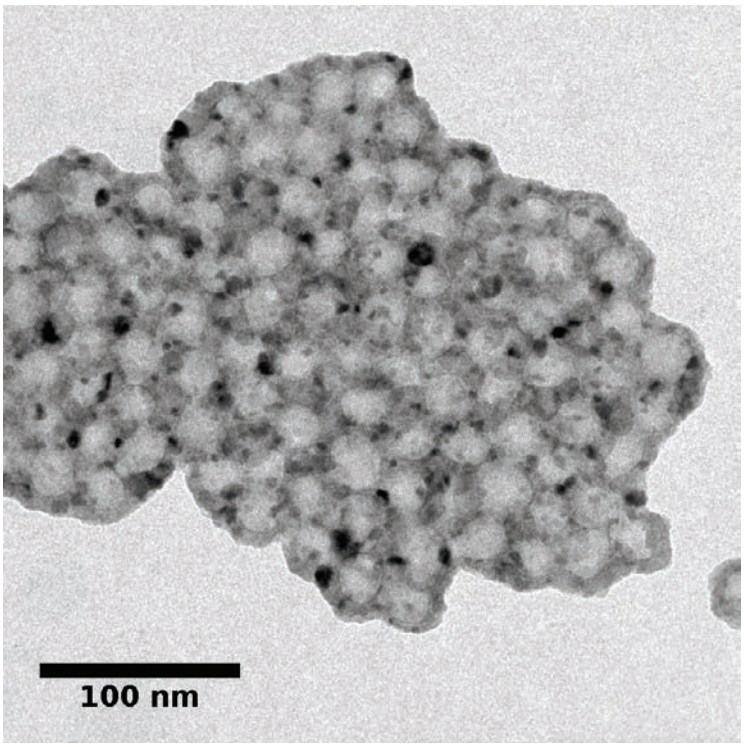

Figure S7. TEM image of the Ni24 sample after oxidation at 500 °C for 1 hour.

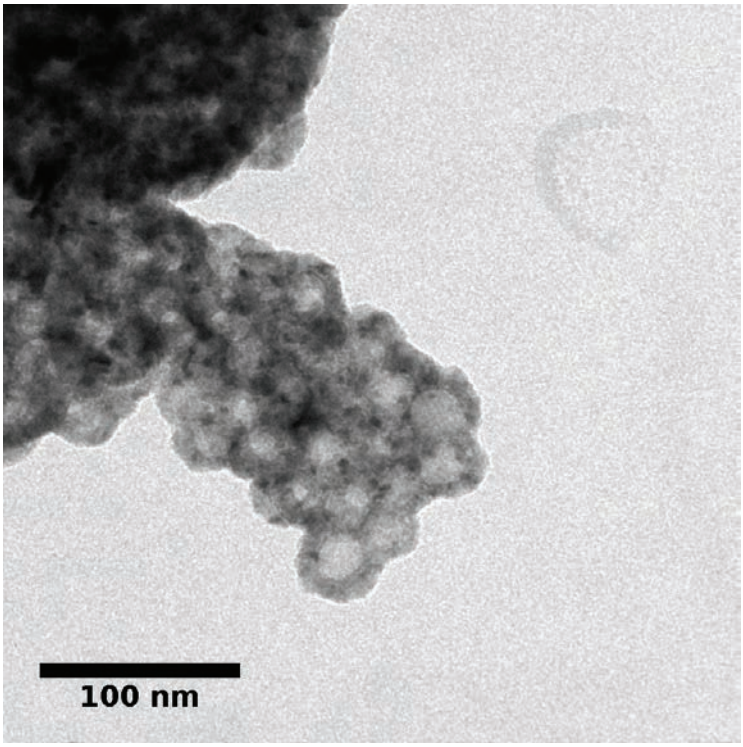

Figure S8. TEM image of the Ni24 sample after oxidation and reduction at 350 °C for 1 hour.

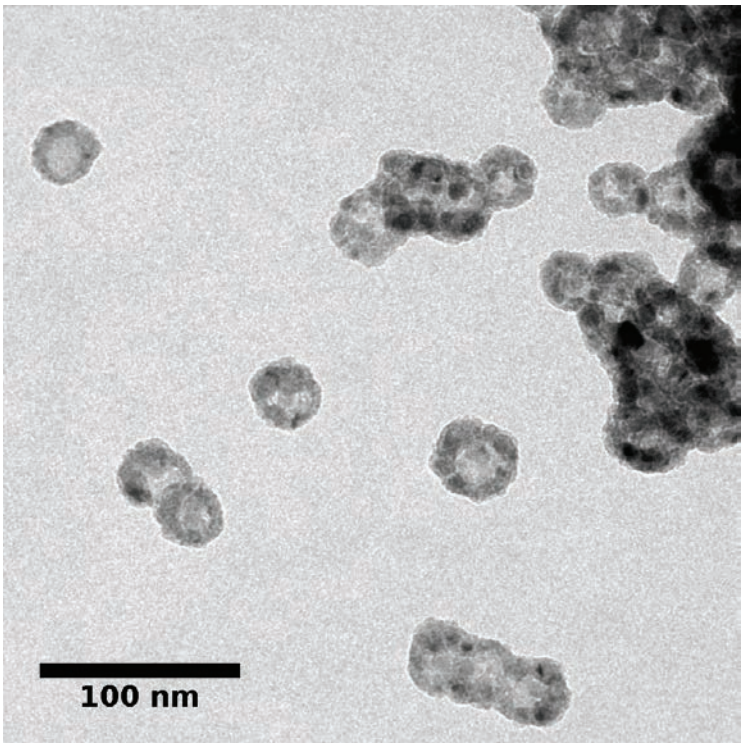

Figure S9. TEM image of the Ni24 sample after oxidation and reduction at 350 °C for 2 hours.

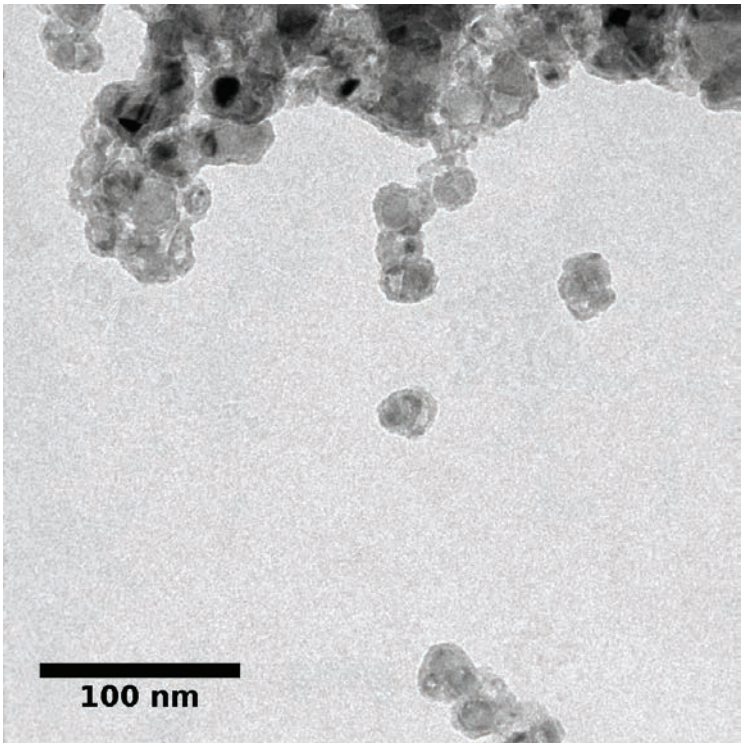

Figure S10. TEM image of the Ni24 sample after oxidation and reduction at 350 °C for 4 hours.

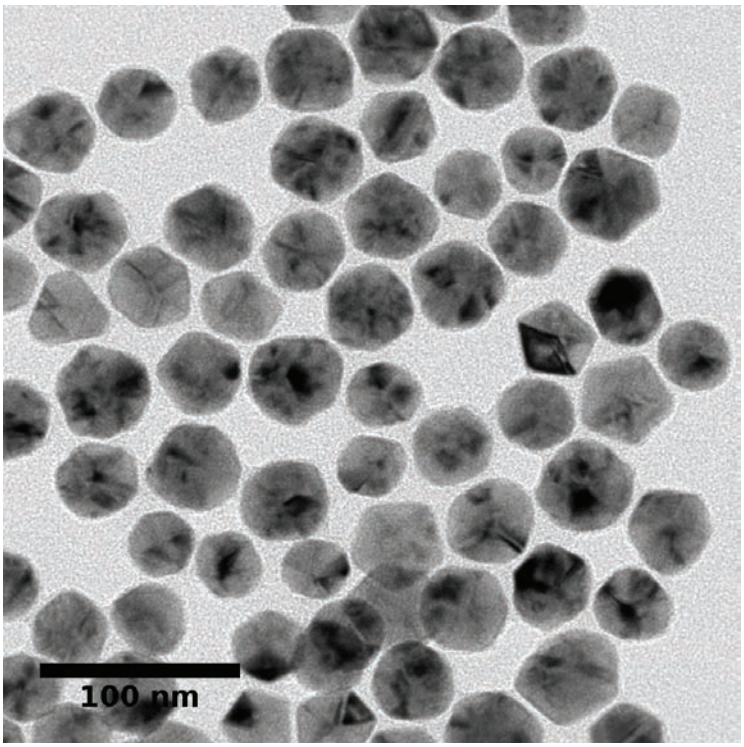

Figure S11. TEM image of the Ni40 sample before any treatment.

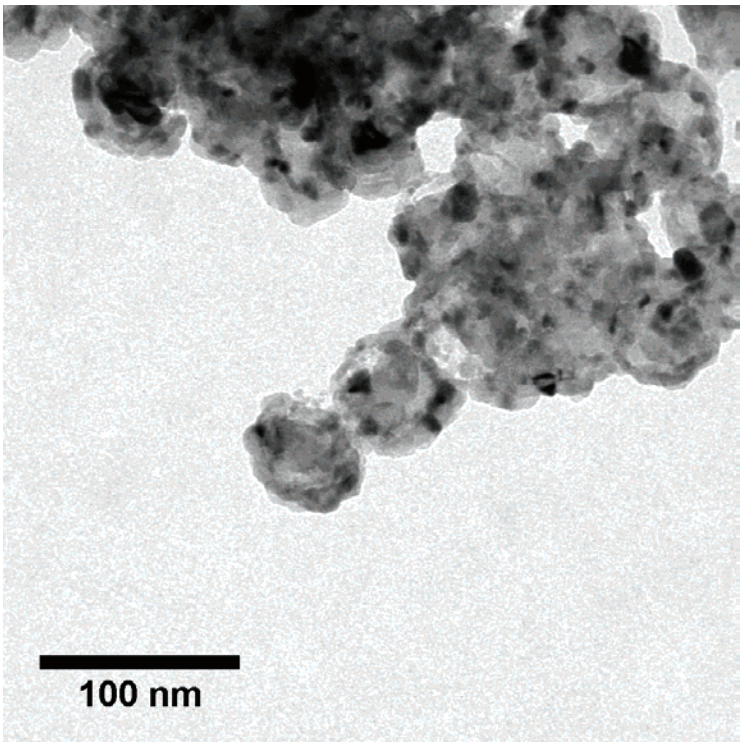

Figure S12. TEM image of the Ni40 sample after oxidation at 500 °C for 1 hour.

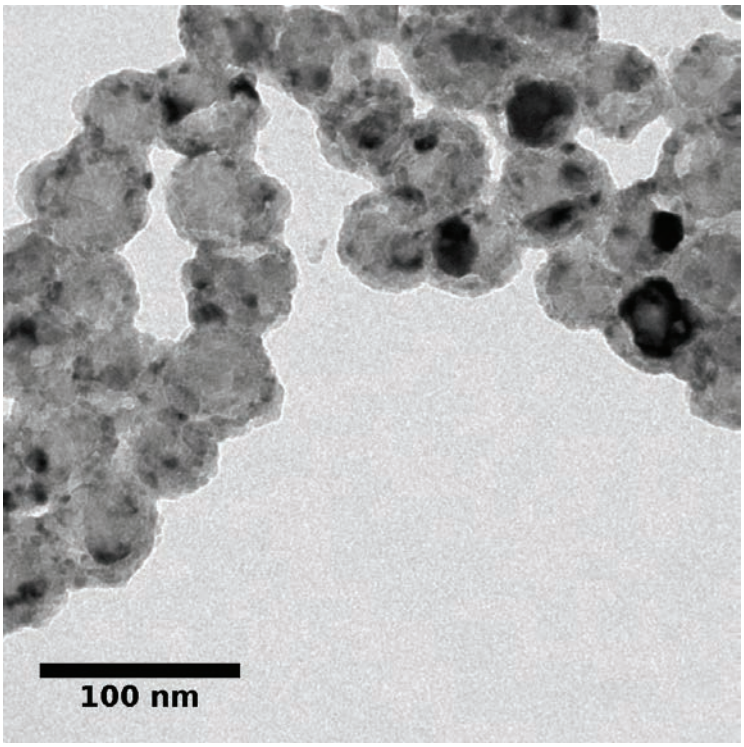

Figure S13. TEM image of the Ni40 sample after oxidation and reduction at 350 °C for 1 hour.

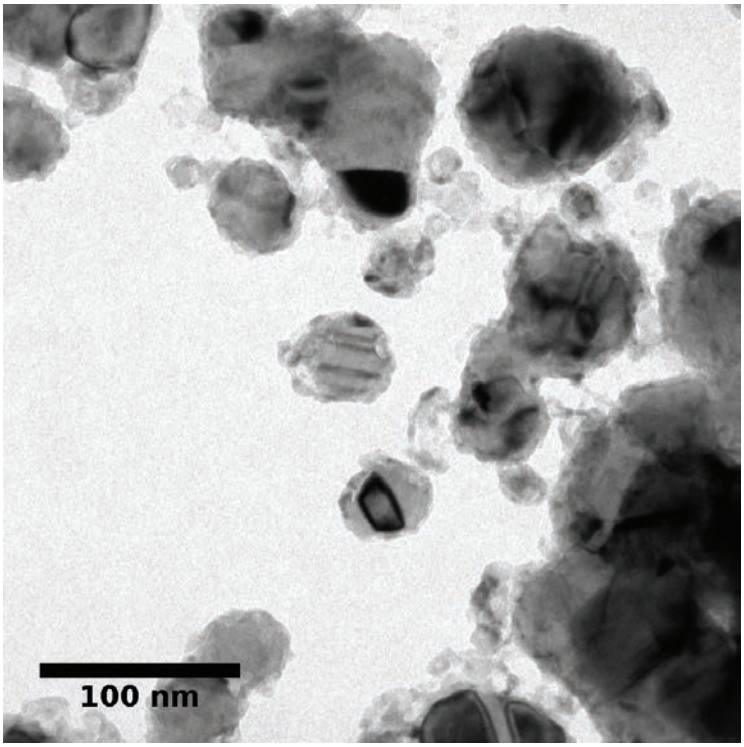

Figure S14. TEM image of the Ni40 sample after oxidation and reduction at 350 °C for 2 hours.

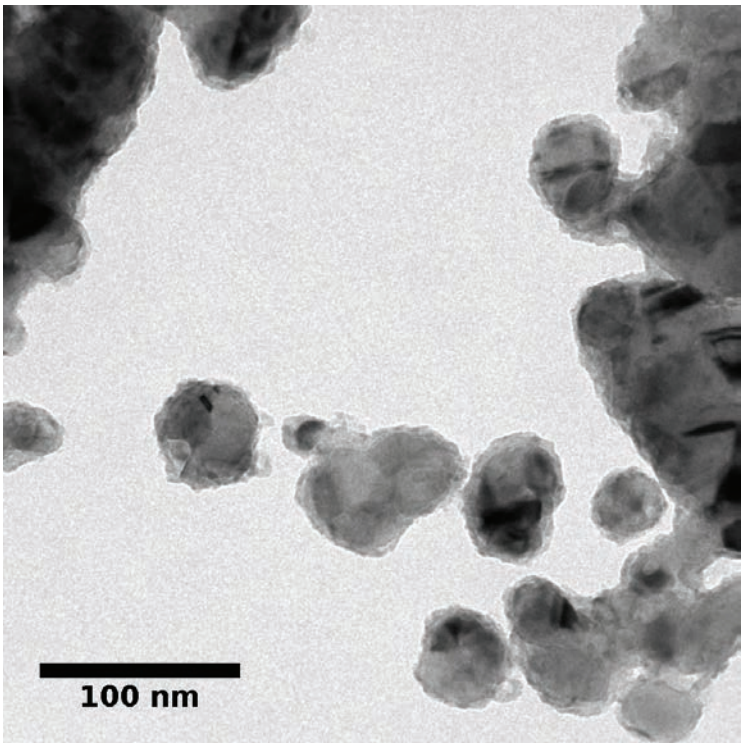

Figure S15. TEM image of the Ni40 sample after oxidation and reduction at 350 °C for 4 hours.

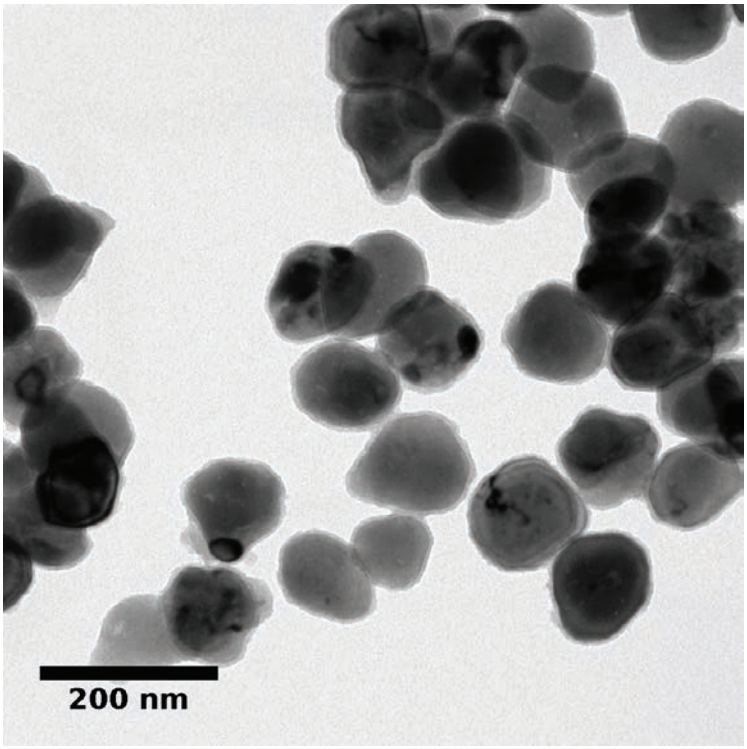

Figure S16. TEM image of the Ni96 sample before any treatment.

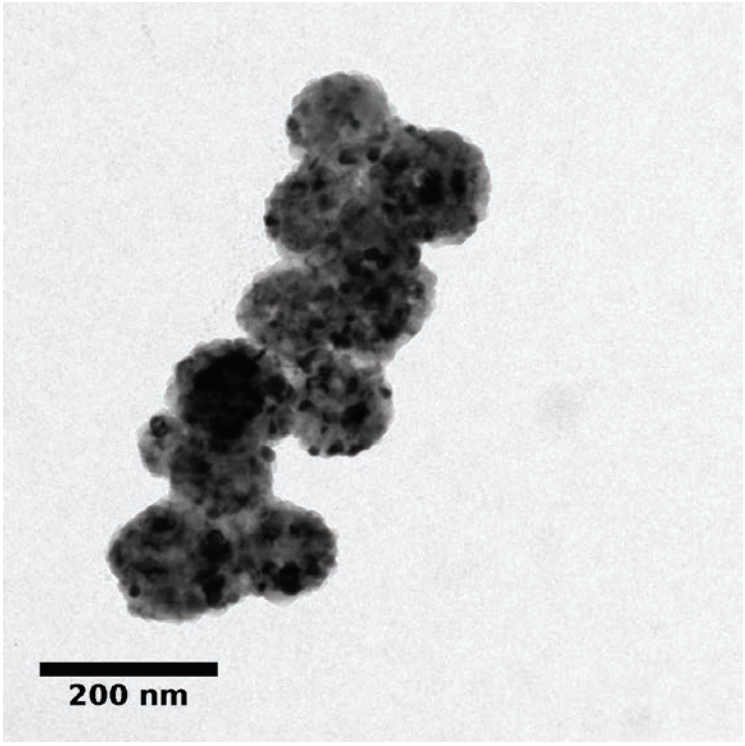

Figure S17. TEM image of the Ni96 sample after oxidation at 500 °C for 1 hour.

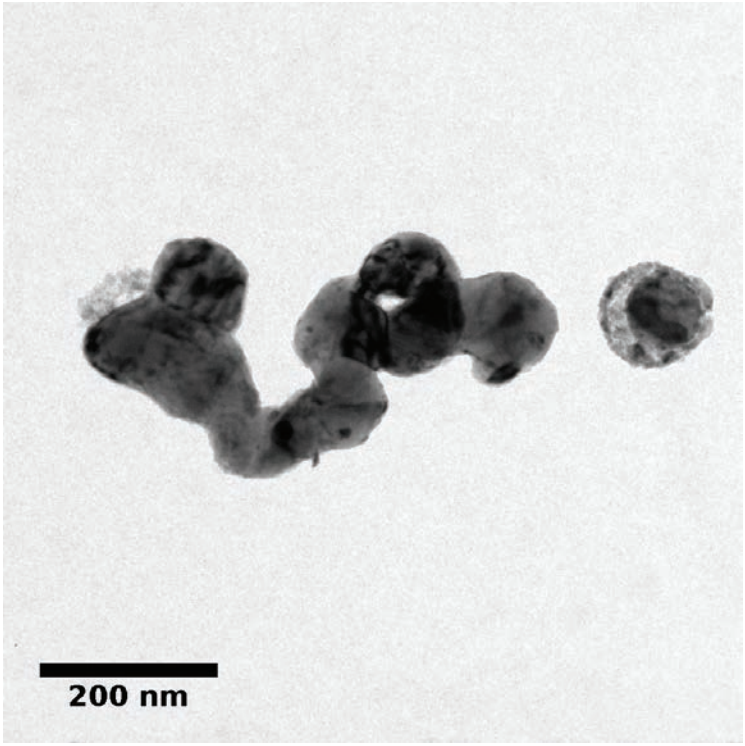

Figure S18. TEM image of the Ni96 sample after oxidation and reduction at 350 °C for 1 hour.

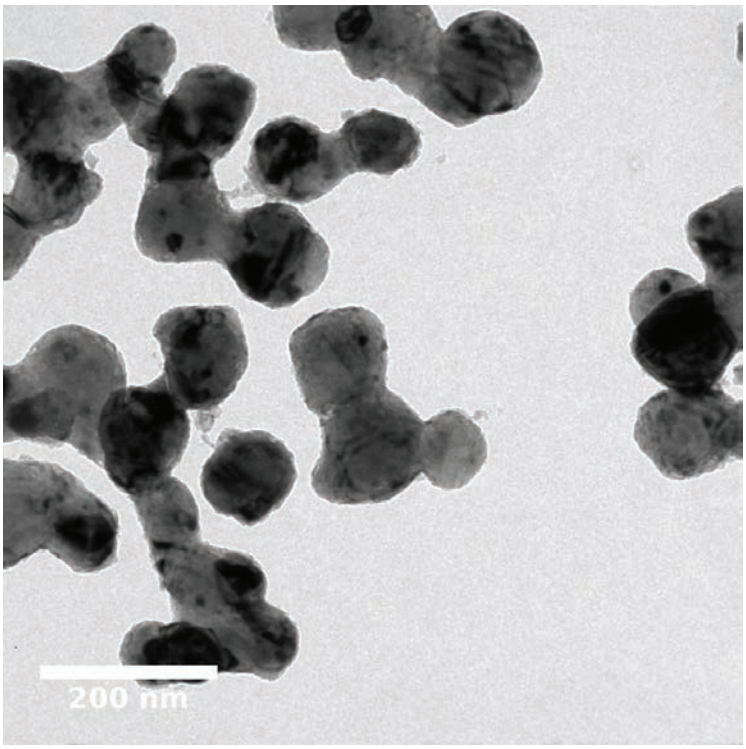

Figure S19. TEM image of the Ni96 sample after oxidation and reduction at 350 °C for 2 hours.

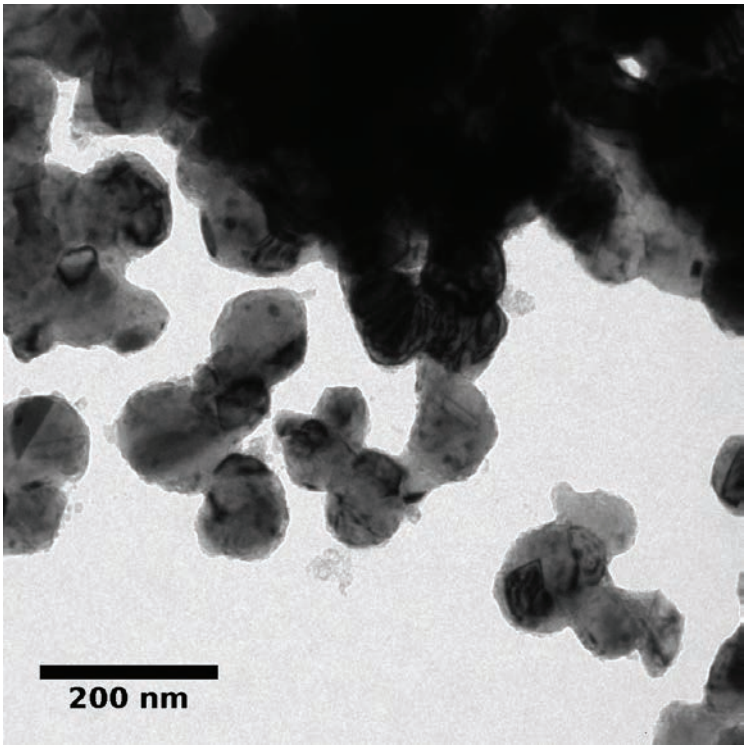

Figure S20. TEM image of the Ni96 sample after oxidation and reduction at 350 °C for 4 hours.

Selected-area electron diffraction patterns for all samples:

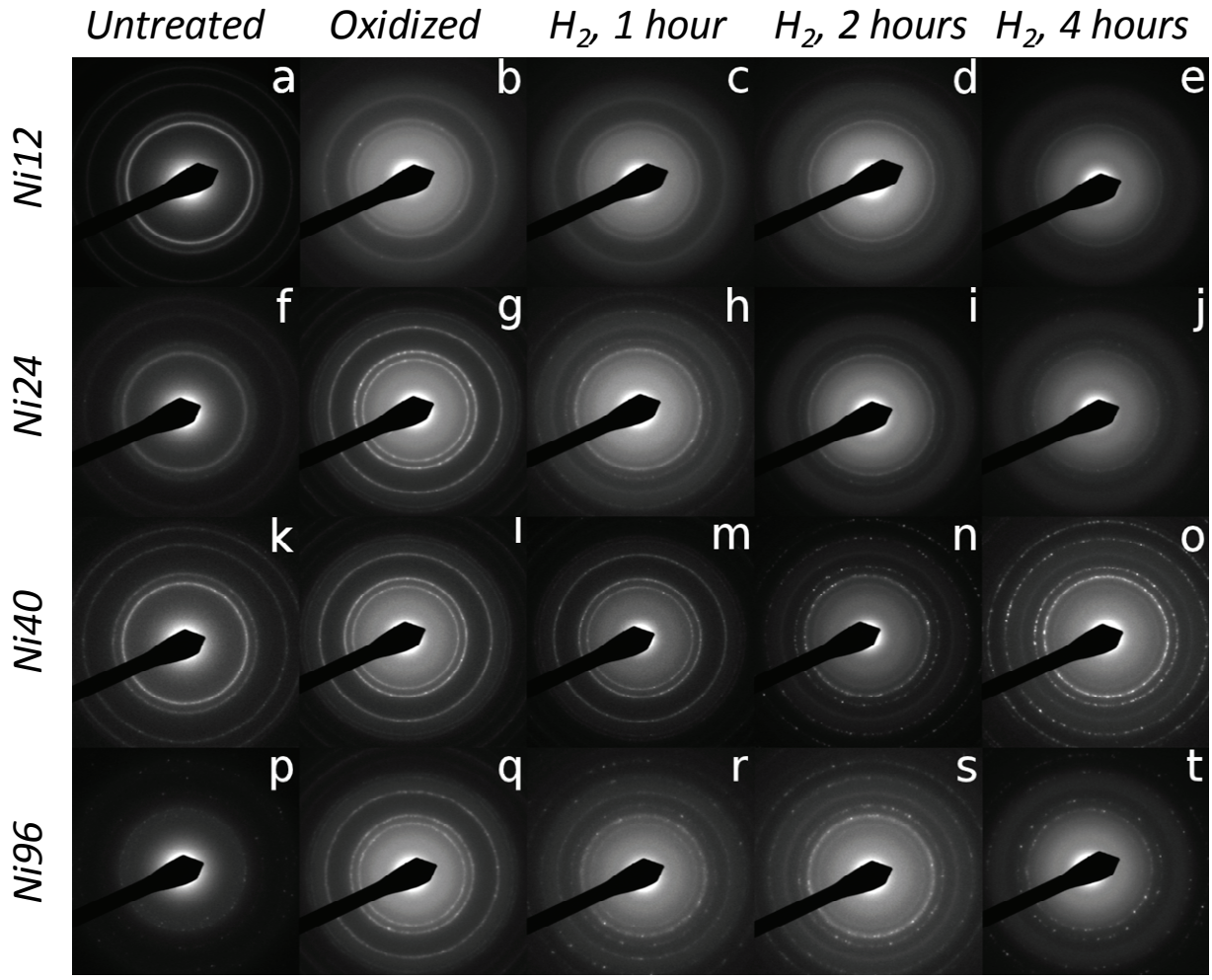

Figure S21. The following phases are present: Ni only: (a,d-f,k,p); Ni and NiO: (h-j,n,o,r-t); NiO only: (b,c,g,l,m,q).

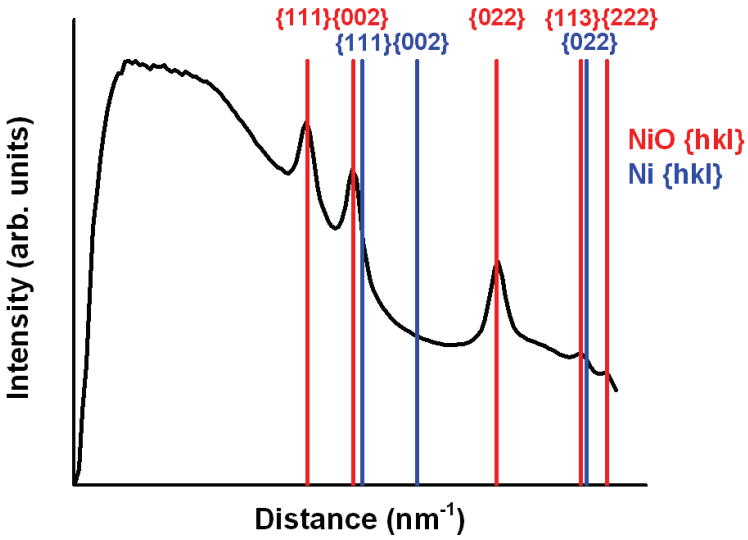

Figure S22. Radial distribution after integration of SAED for Ni96 nanoparticles after oxidation (corresponding to Figure S21q).

HRTEM images from Figure 2 without the color overlays:

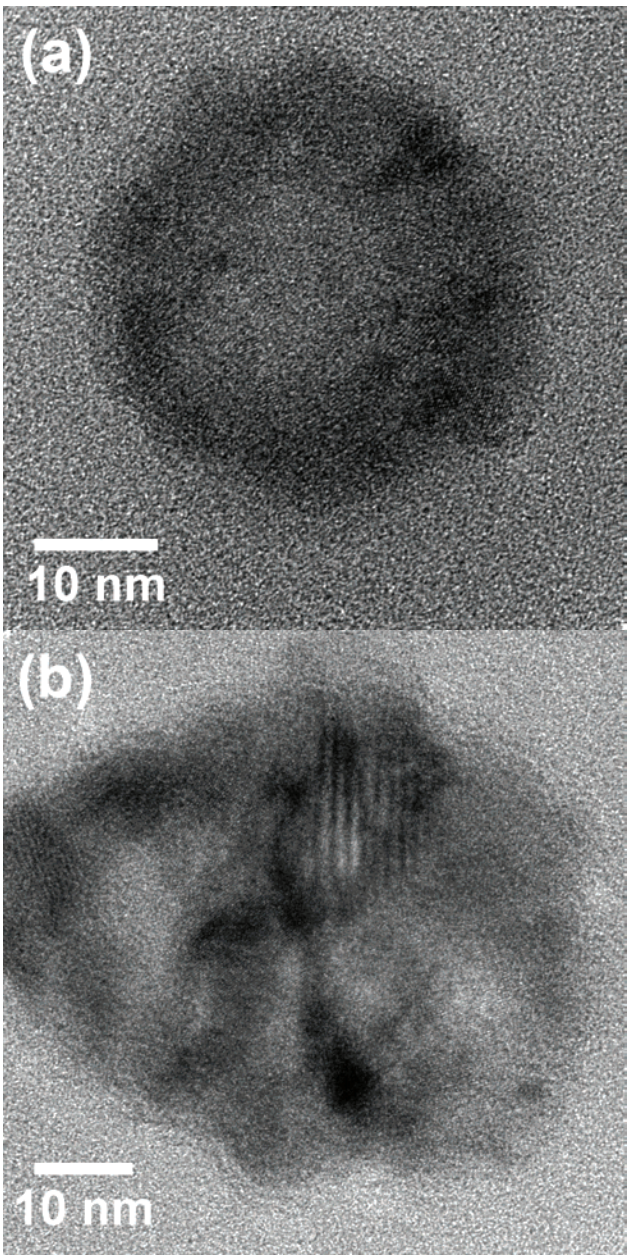

Figure S23. HRETM images of (a) Ni24 nanoparticle after reduction for two hours at 350 °C and (b) Ni40 nanoparticle after reduction for one hour at 350 °C.