Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Efficient Catalyst for Oxygen Evolution Derived from Cobalt Based Alloy Nanochains

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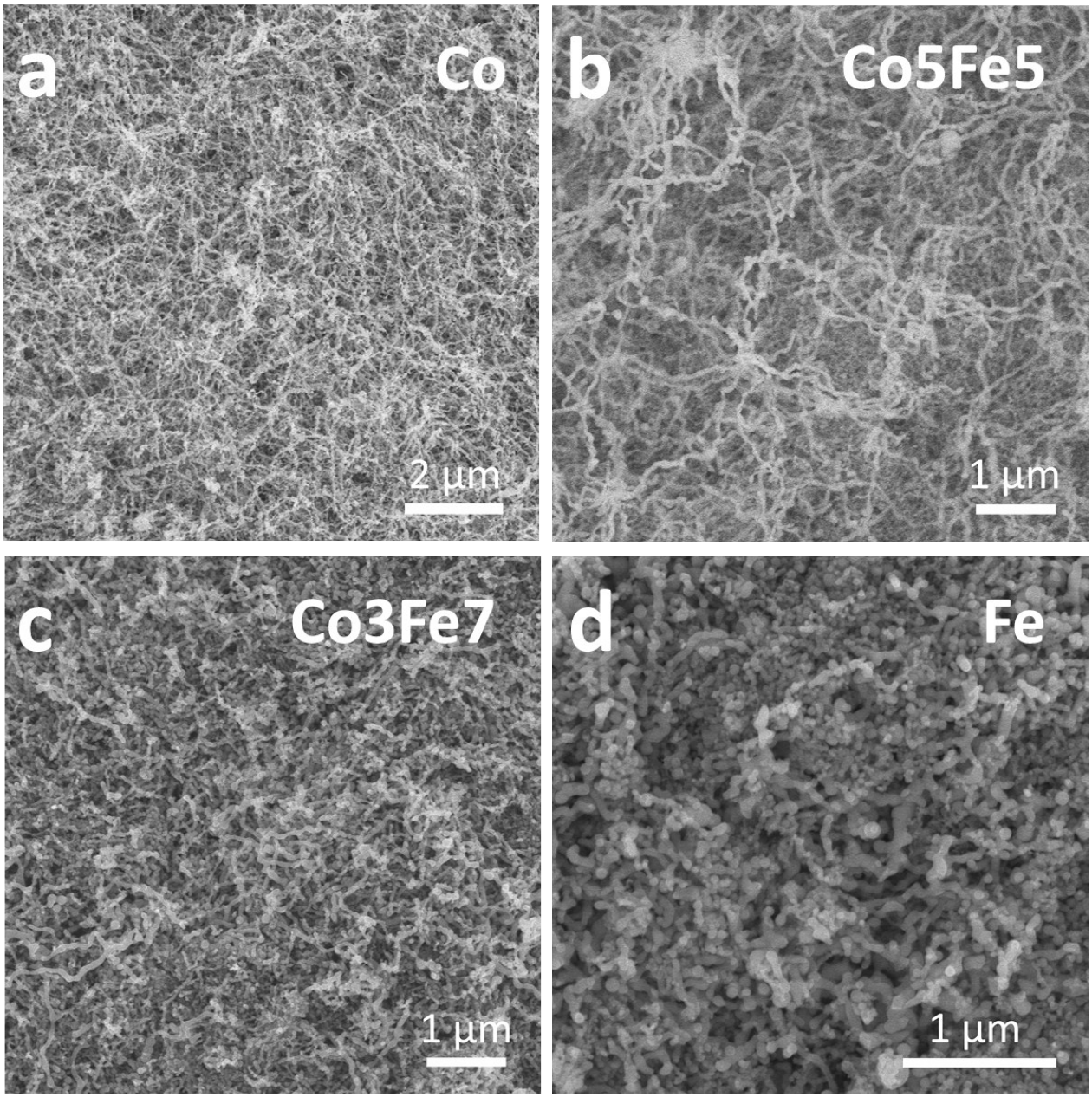

Figure S1. SEM images of Co, Fe and Co-Fe alloy nanochains.

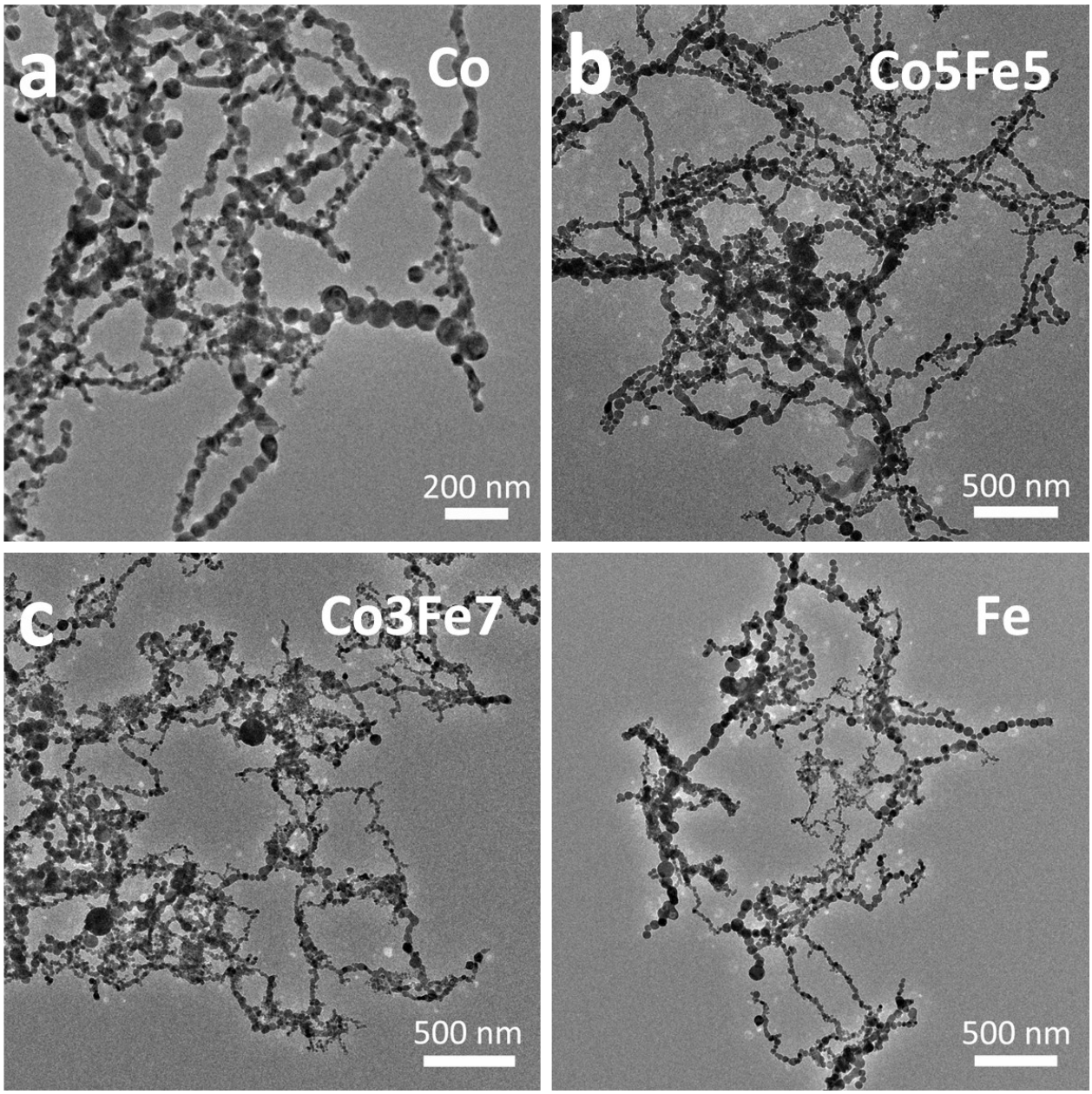

Figure S2. TEM images of Co, Fe and Co-Fe alloy nanochains.

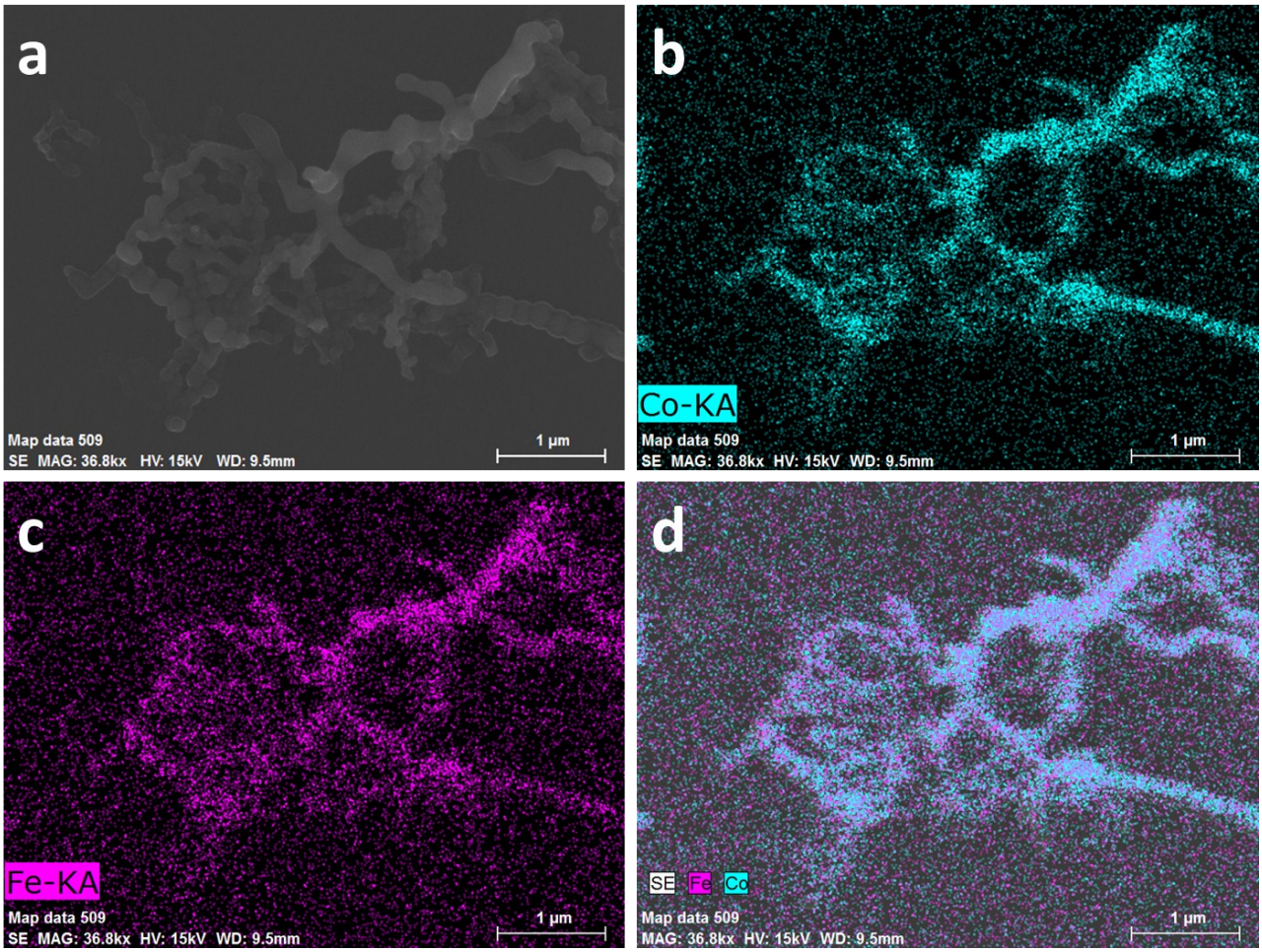

Figure S3. EDX-Mapping results of Co7Fe3 alloy nanochains.

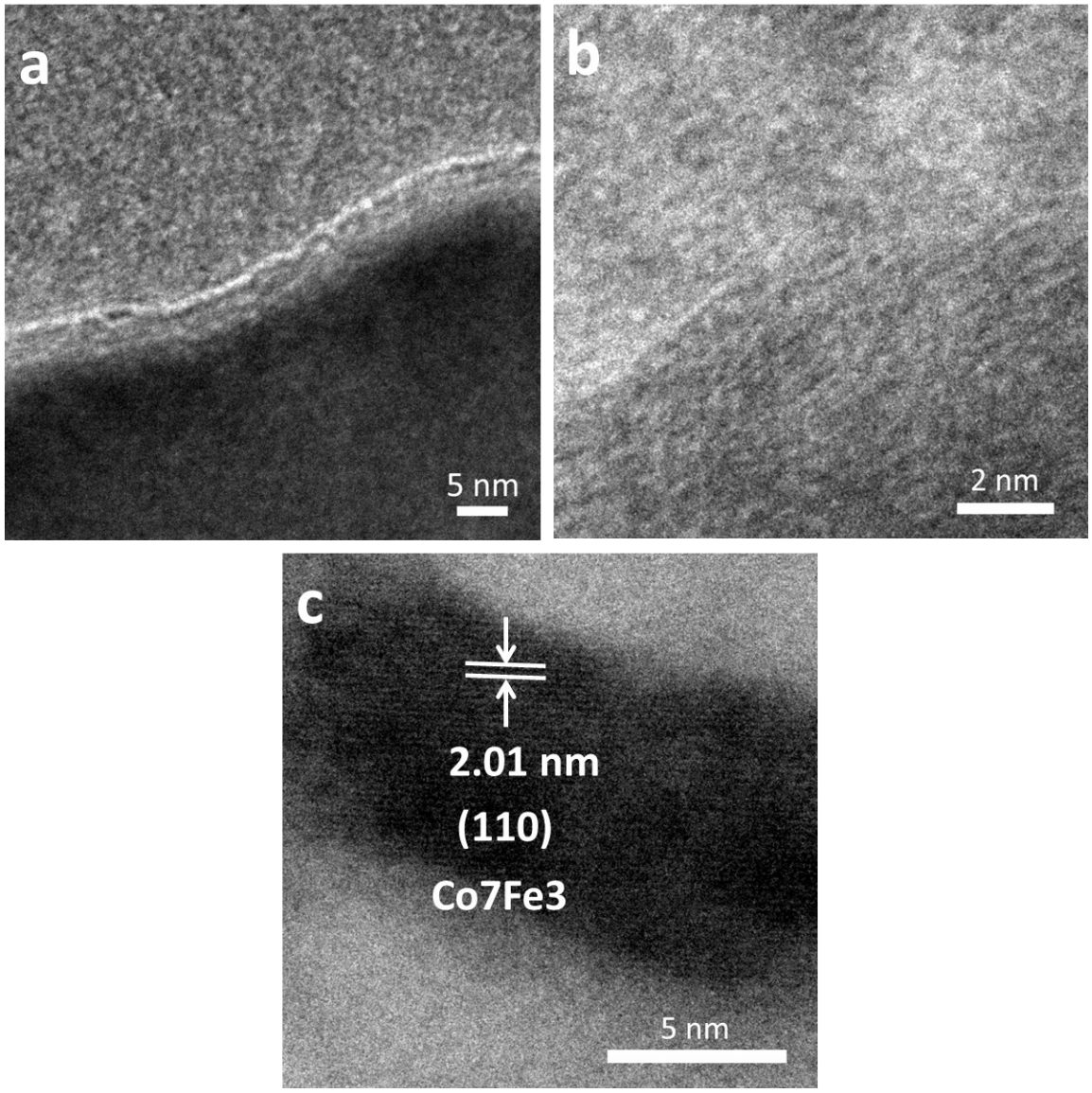

Figure S4. High-resolution TEM images of Co7Fe3（a）Co7Fe3 and surface oxide. (b) Surface oxide. (c) Co7Fe3 metal.

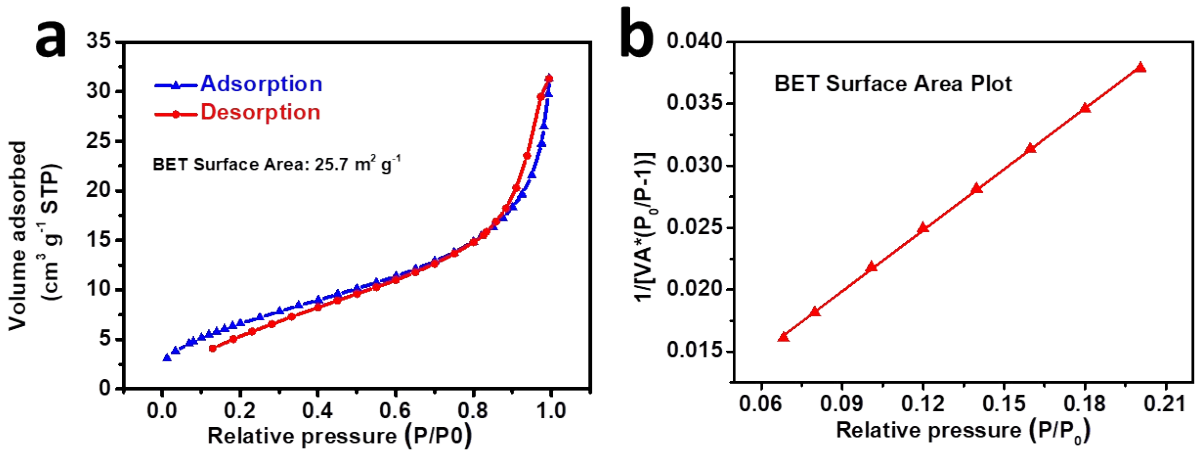

Figure S5. N_2 adsorption-desorption data of Co7Fe3

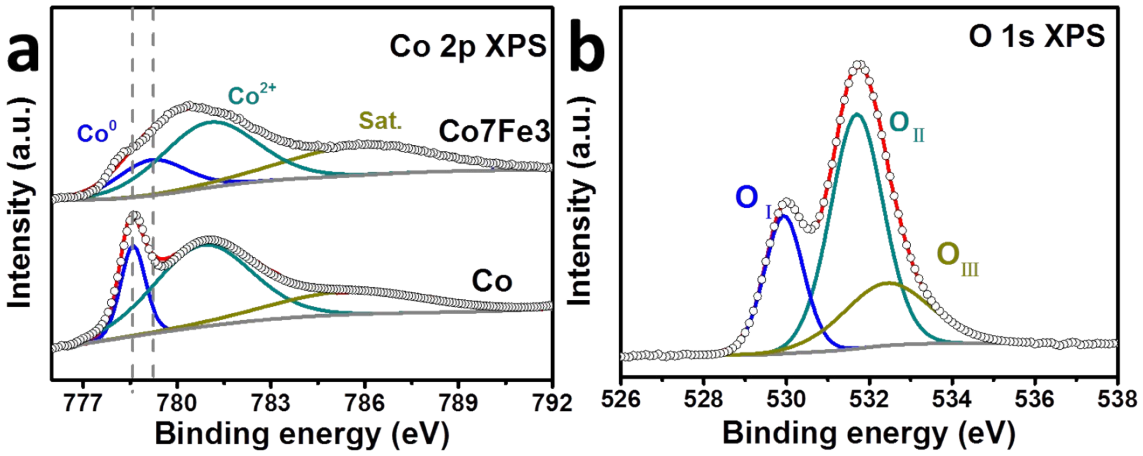

Figure S6. (a) Co 2p XPS spectrum of Co and Co7Fe3 nanochains. (b) O 1s XPS spectrum of Co nanochains.

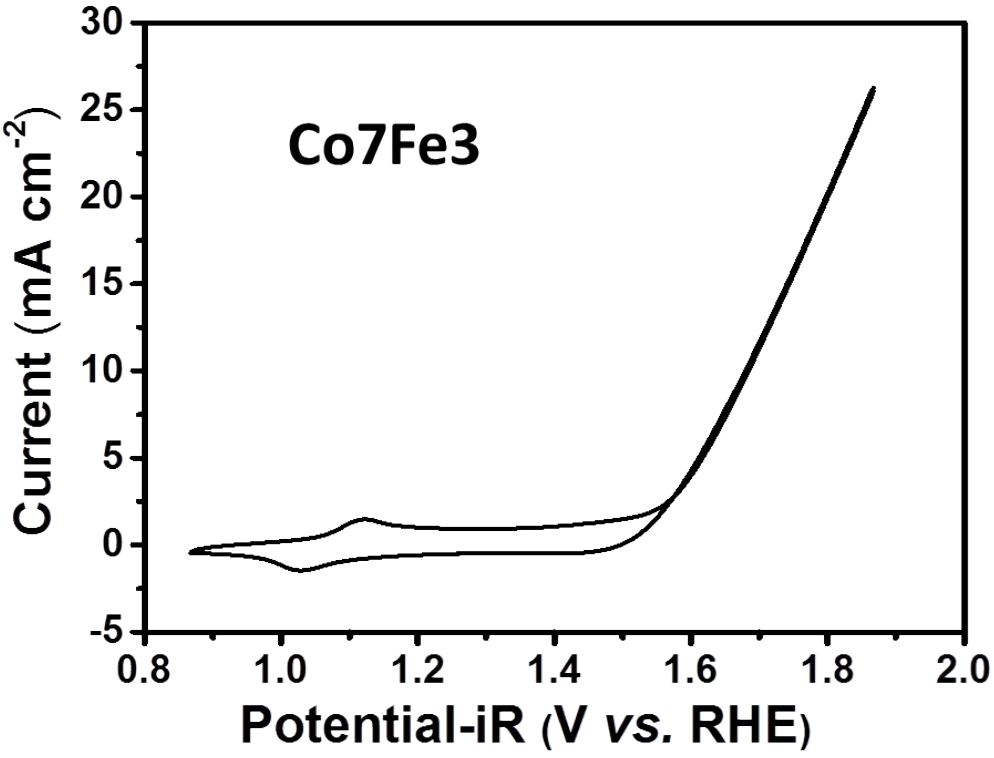

Figure S7. (a) CV curve of Co7Fe3.

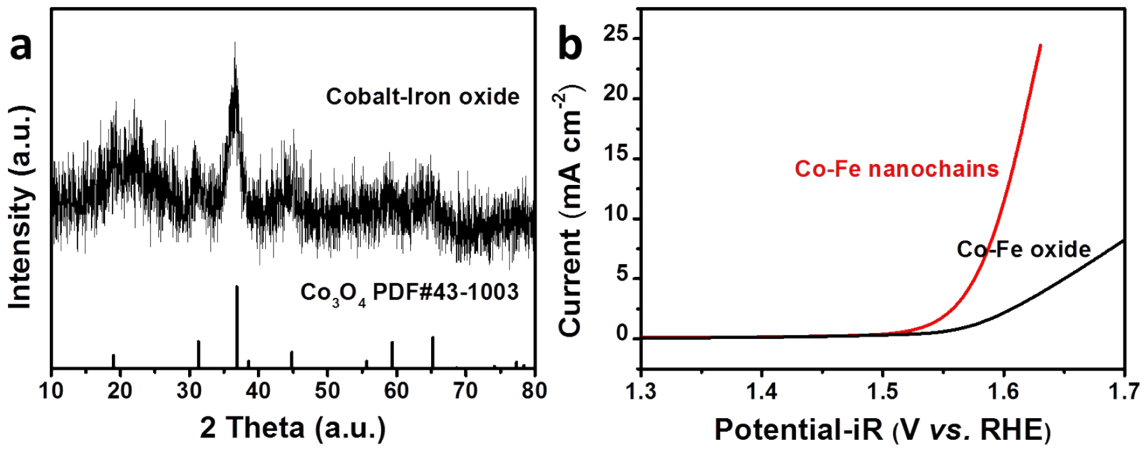

Figure S8. (a) XRD pattern of cobalt-iron oxide prepared from Co7Fe3 nanochains. (b) Polarization curves of Co7Fe3 nanochains and cobalt-iron oxide prepared from Co7Fe3.

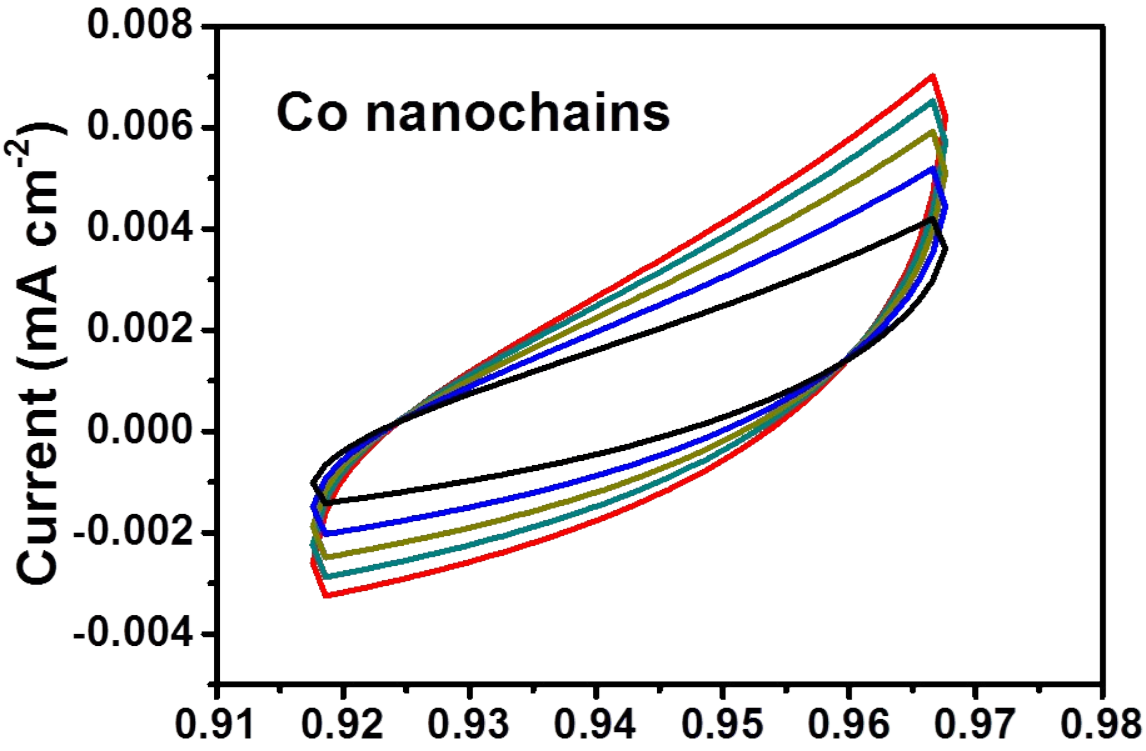

Figure S9. CV curves of Co nanochains in the region where no redox reaction occurs, the scan rates are 2, 4, 6, 8, 10 mV s^{-1}.

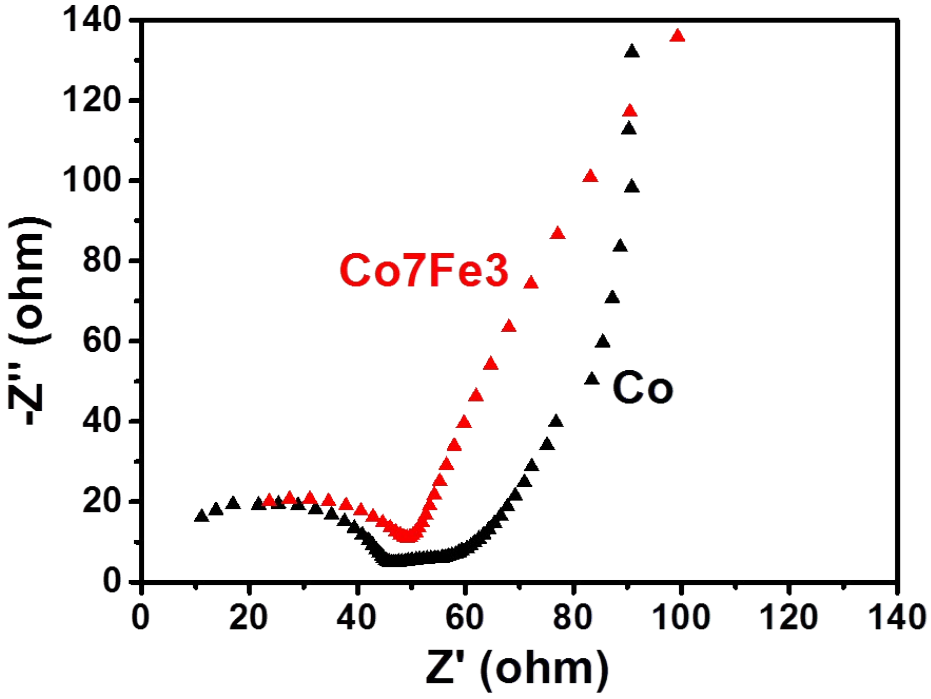

Figure S10. Electrochemical impedance spectroscopy (EIS) of Co7Fe3 and Co nanochains.

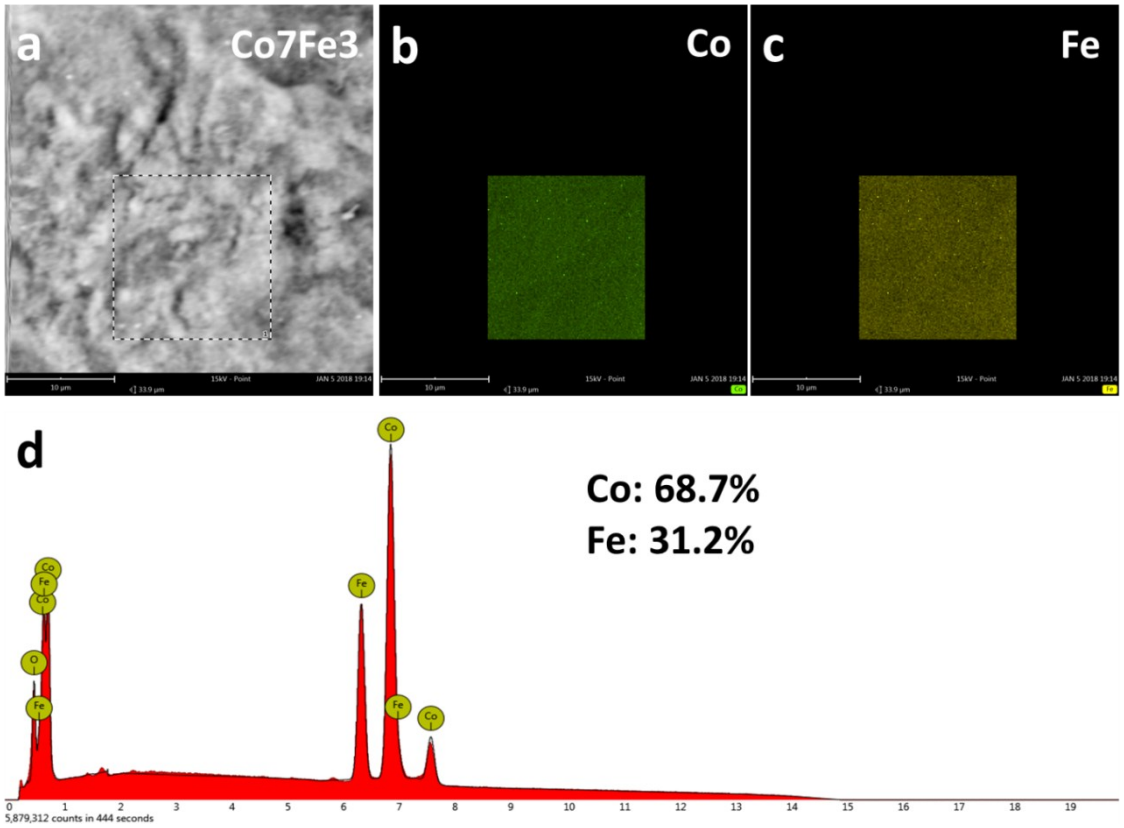

Figure S11. SEM-EDX results of Co7Fe3.

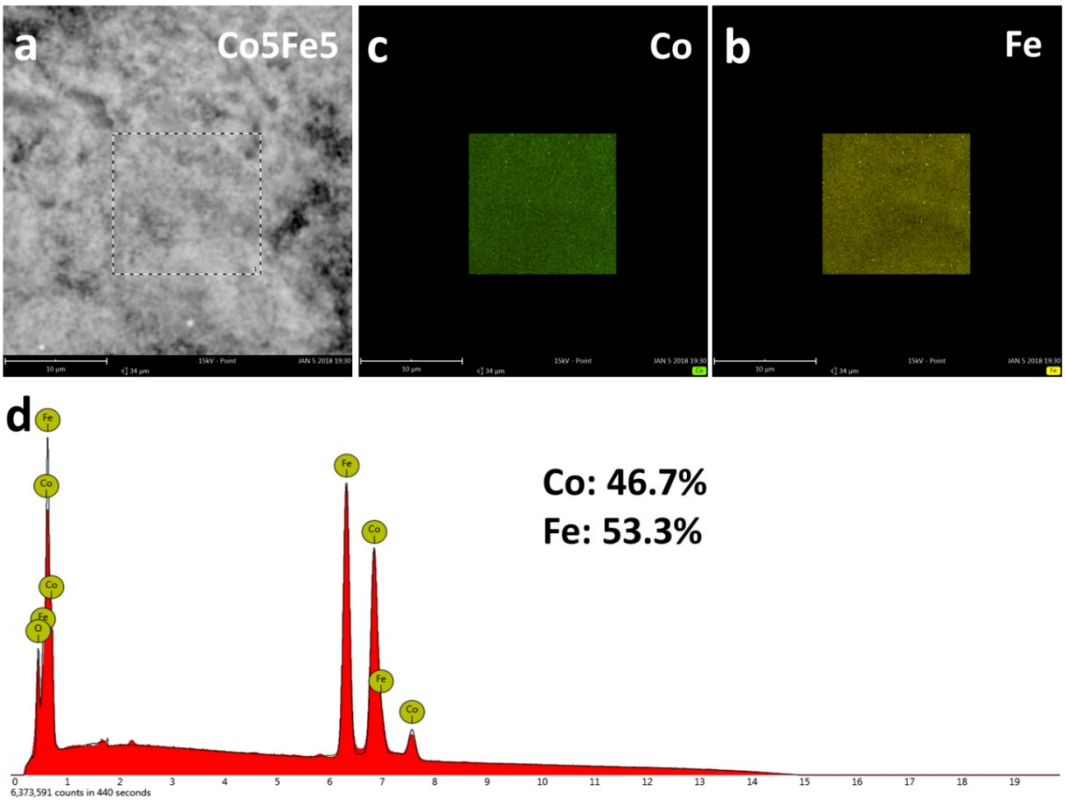

Figure S12. SEM-EDX results of Co5Fe5.

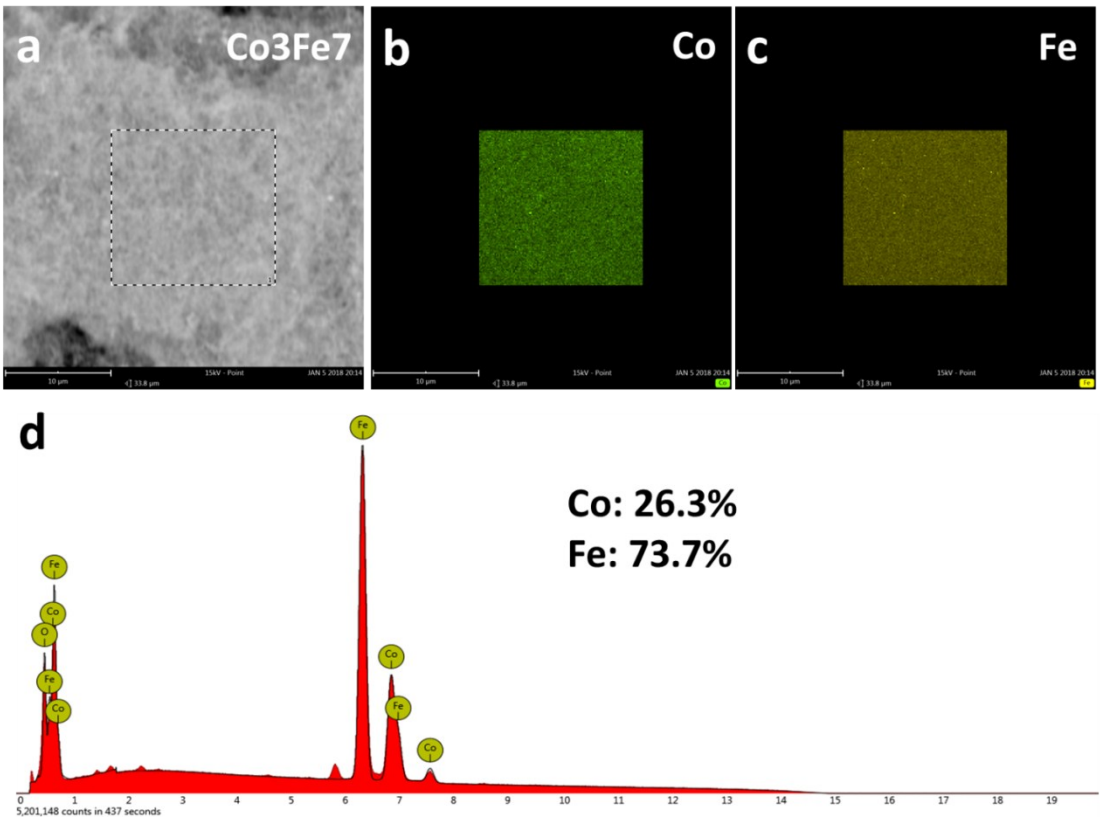

Figure S13. SEM-EDX results of Co3Fe7.

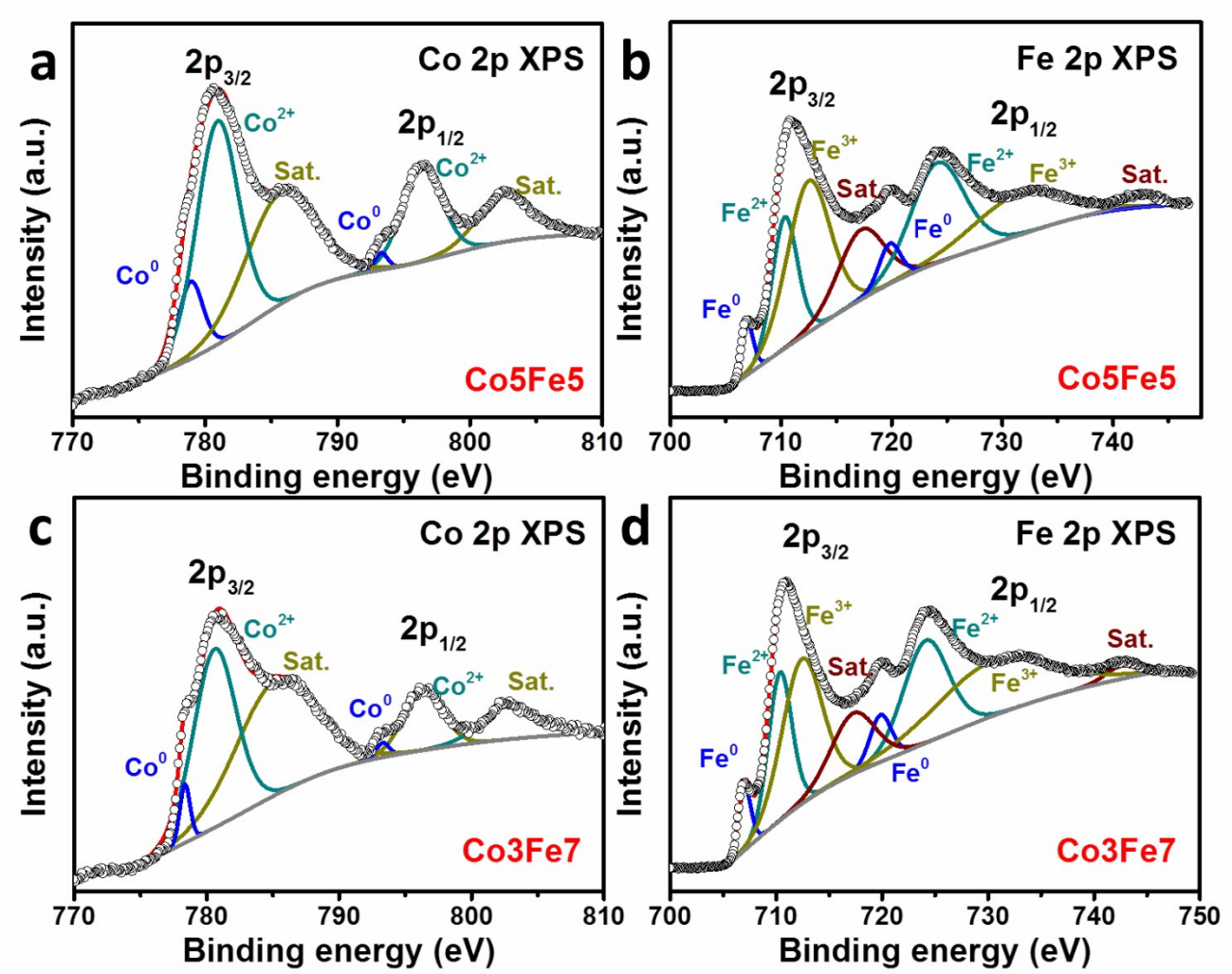

Figure S14. (a) Co and (b) Fe high resolution XPS spectrum of Co5Fe5. (c) Co and (d) Fe high resolution XPS spectrum of Co3Fe7.

Table S1 The ratio of Co/Fe in the surface oxide of Co-Fe alloy nanochains.

Sample	**Co7Fe3**	**Co5Fe5**	**Co3Fe7**
Co/Fe	**0.75**	**0.48**	**0.23**

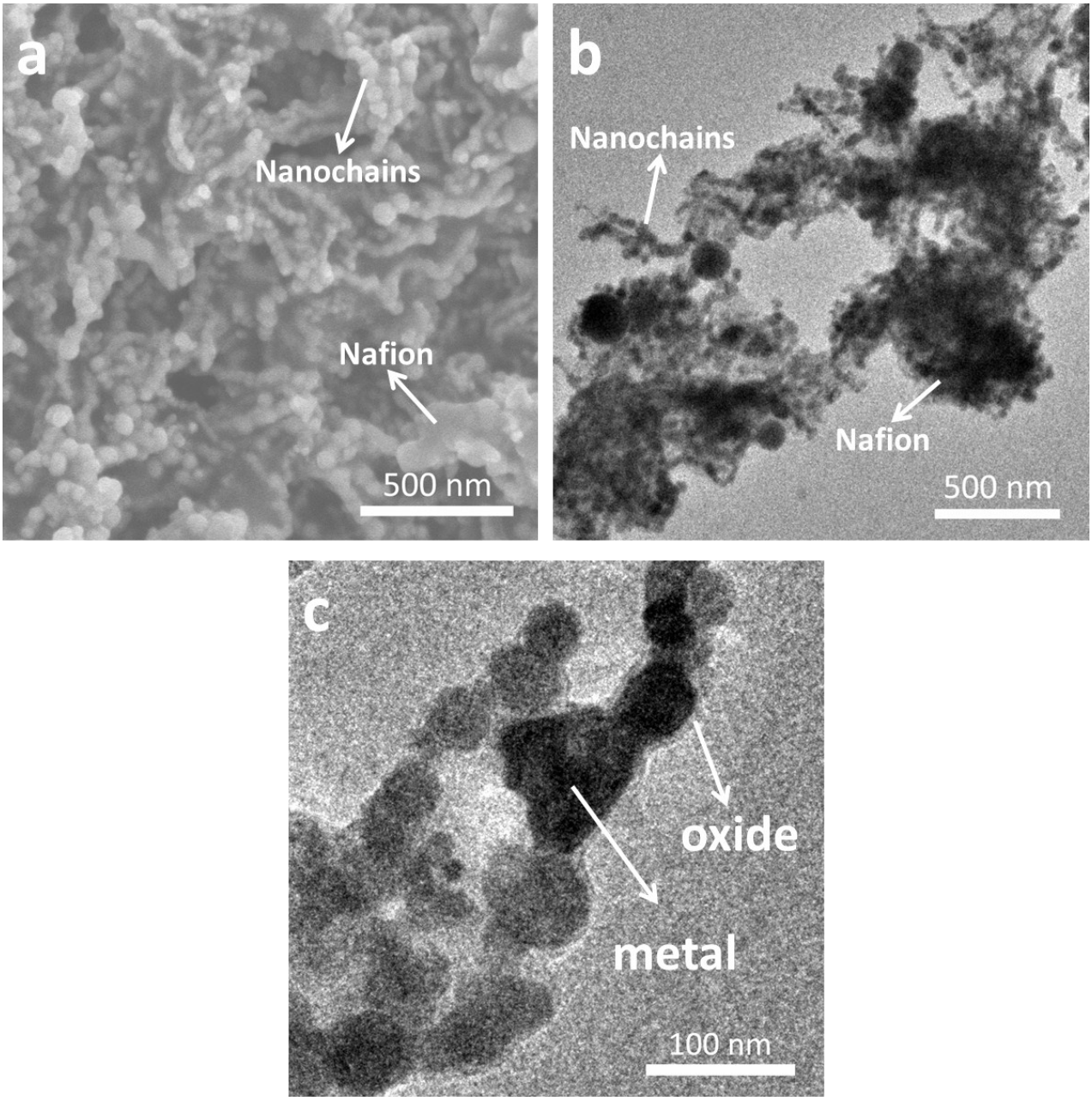

Figure S15. (a) SEM and (b) (c) TEM images of Co7Fe3 nanochains after electrochemical test.

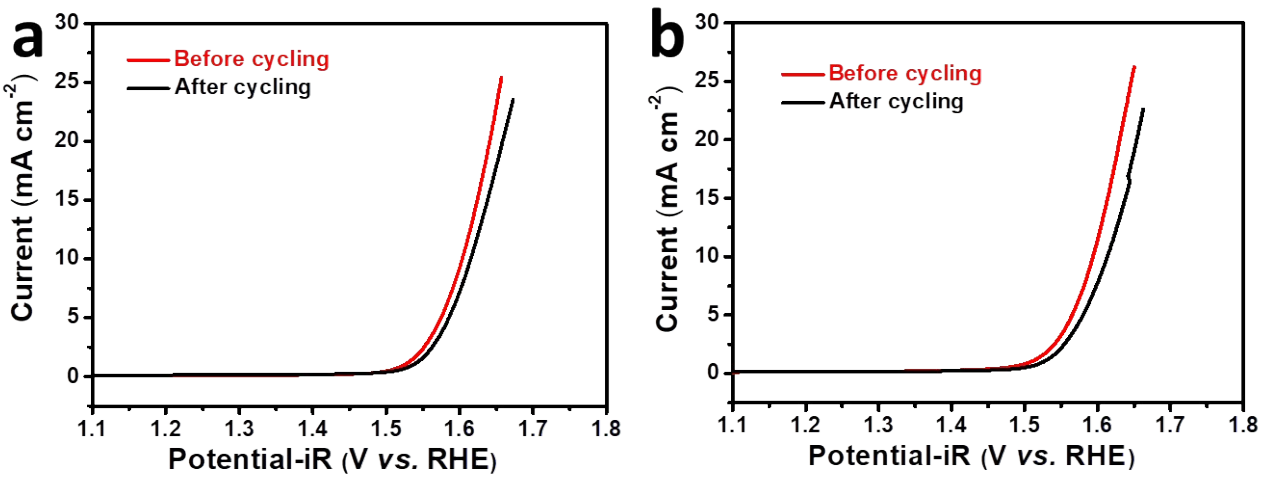

Figure S16. (a) Polarization curves of Co7Fe3 before and after chronoamperometry test. (b) Polarization curves of Co7Fe3 before and after chronopotentiometry test.

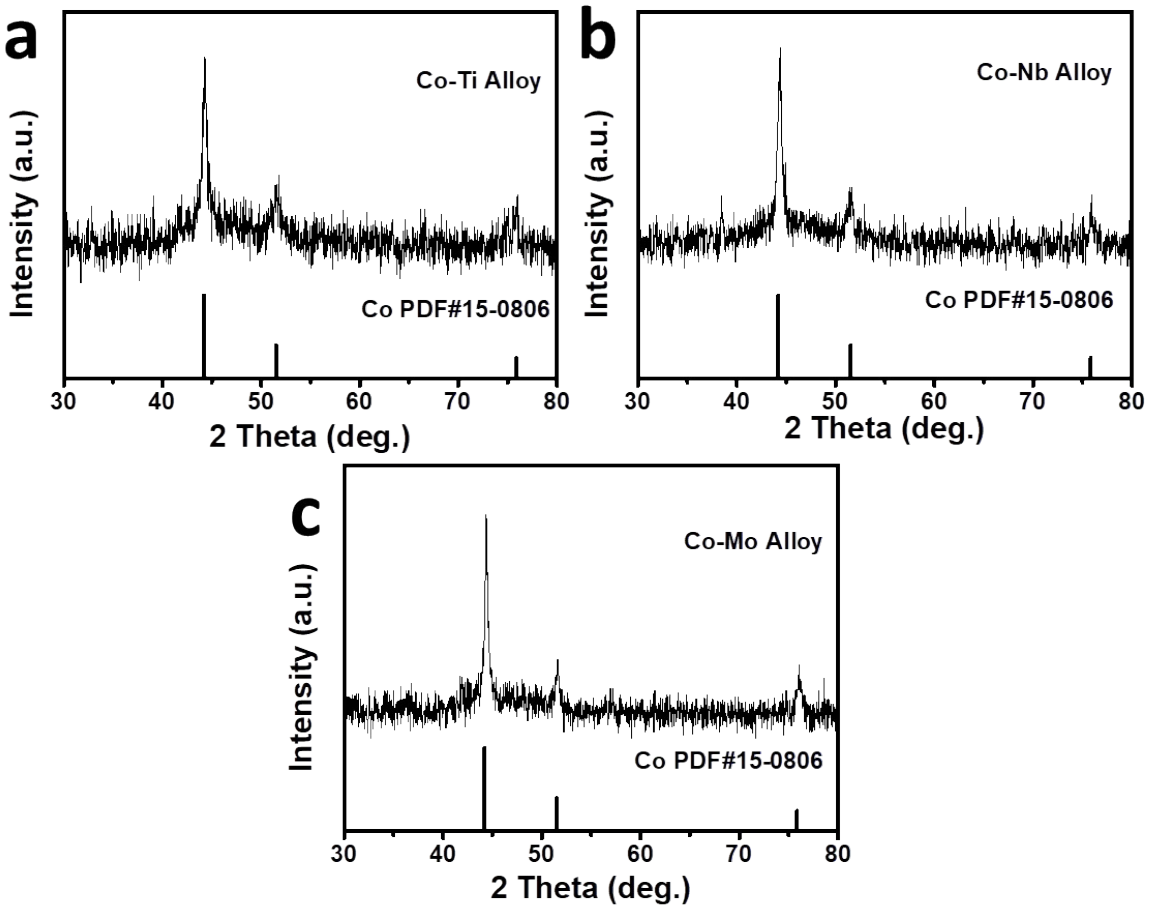

Figure S 17. (a) XRD pattern of Co-Ti alloy. (b) XRD pattern of Co-Nb alloy. (c) XRD pattern of Co-Mo alloy.

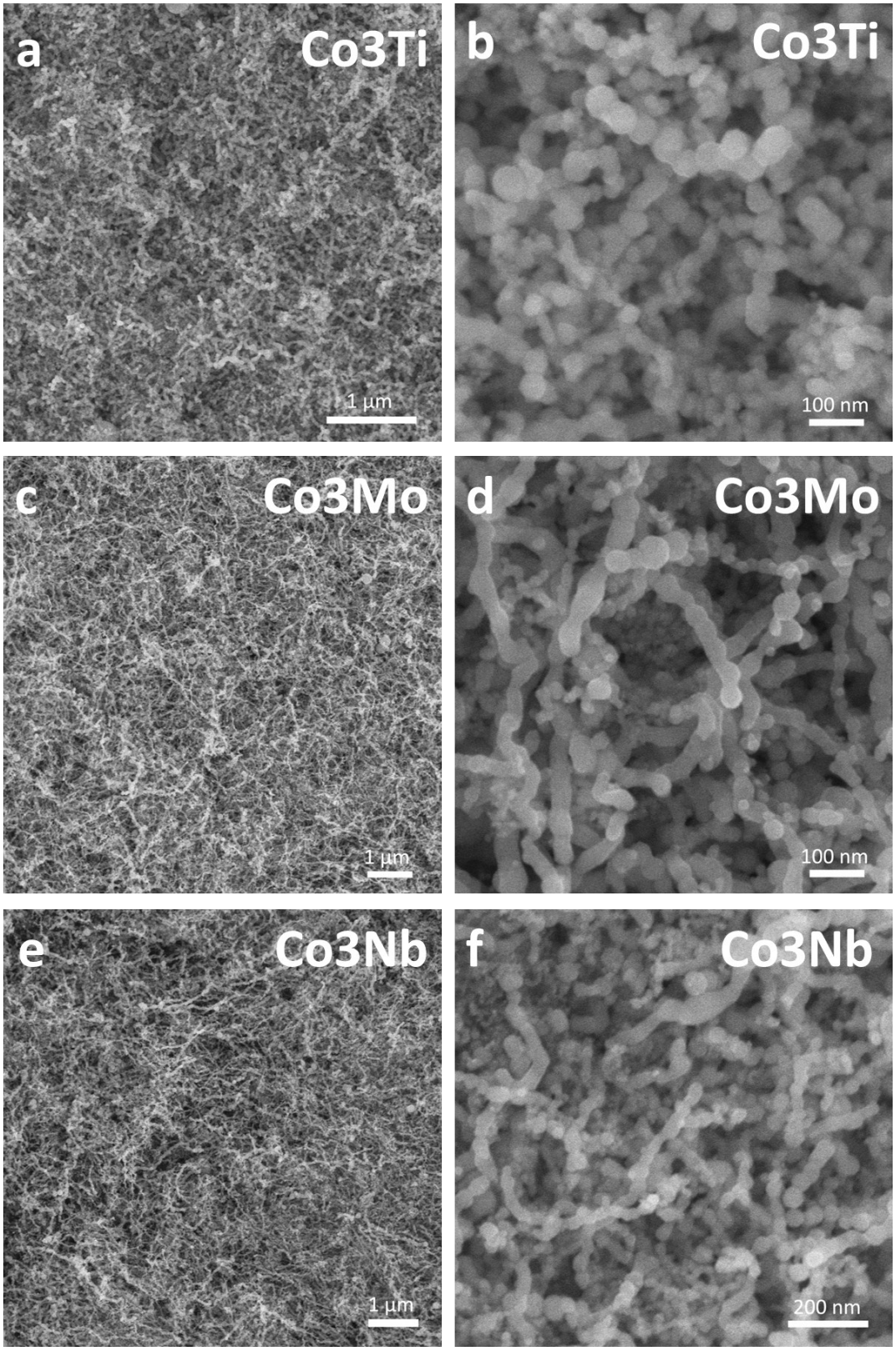

Figure S18. (a), (b) SEM images of Co-Ti alloy nanochains. (c), (d) SEM image of Co-Mo alloy nanochains. (e), (f) SEM image of Co-Nb alloy nanochains.

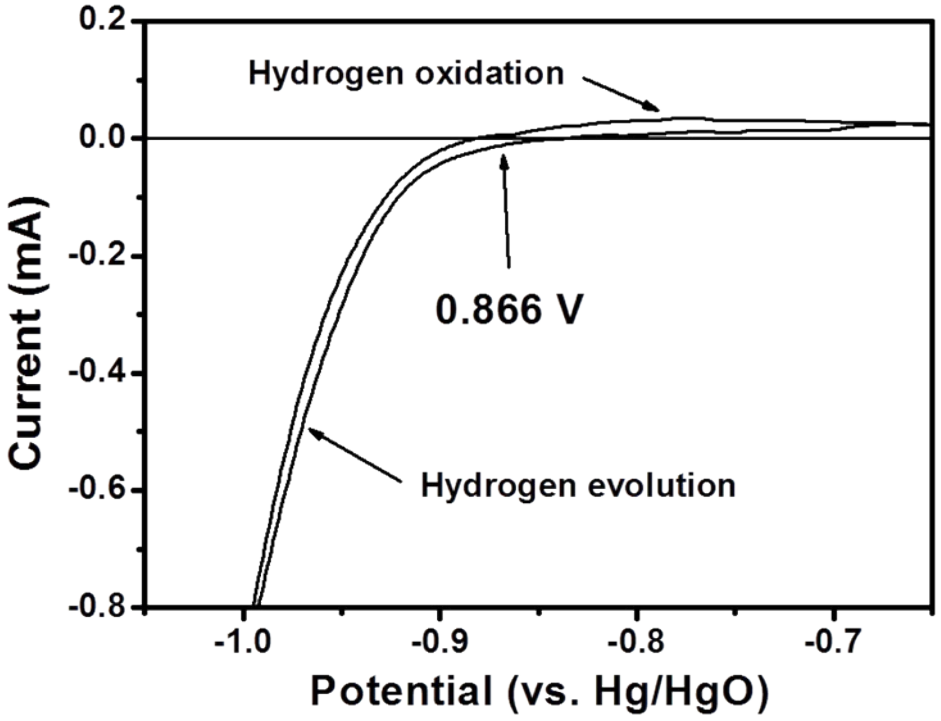

Figure S19. CV curve measured in H_2 saturated 0.1 M KOH.