Supplementary information for

**Bifunctional Al doped** **Cobalt Ferrocyanide Nanocube Array for Energy-saving Hydrogen Production via Urea Electrolysis**

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Fig. S1 XRD patterns of NF, Co2Fe(CN)6/NF and Al-Co2Fe(CN)6/NF



Fig. S2 SEM images of Al-Co2Fe(CN)6/NF



Fig. S3 (a) The polarization curves of UOR of Al-Co2Fe(CN)6/NF at different stirring times;  (b) The polarization curves of Al-Co2Fe(CN)6/NF with different Co2+ concentration;  (c) The polarization curves of UOR of Al-Co2Fe(CN)6/NF with different Al3+ concentrations;  (d) The polarization curves of UOR of Co2Fe(CN)6/NF

doped with different metals



Fig.S4 (a) The polarization curves of HER of Al-Co2Fe(CN)6/NF at different stirring times;  (b) The polarization curves of HER of Al-Co2Fe(CN)6/NF with different Co2+ concentration;  (c) The polarization curves of HER of Al-Co2Fe(CN)6/NF with different Al3+ concentrations;  (d) The polarization curves of HER of Co2Fe(CN)6/NF doped with different metals



Fig.S5 (a) Polarization curves of UOR of Al-Co2Fe(CN)6/NF in electrolyte solutions under different conditions  (b) The polarization curves of HER of Al-Co2Fe(CN)6/NF in electrolyte solutions under different conditions



Fig.S6 Cyclic voltammetry curves obtained at a sweep rate of 10-110 mV/s: (a) Al-Co2Fe(CN)6/NF; (b) Co2Fe(CN)6/NF; (c) NF; (d) Linear fitting of the capacitive current densities Δ*j* against the CV scan rates

**Supplementary Table 1.** Comparison of the catalytic performances of different UOR electrocatalysts

