Electronic Supplementary Information (ESI)

Large-scale Growth of Hierarchical Transition-metal Vanadate Nanosheets on Metal Meshes as Monolith Catalysts for De-NO_x Reaction

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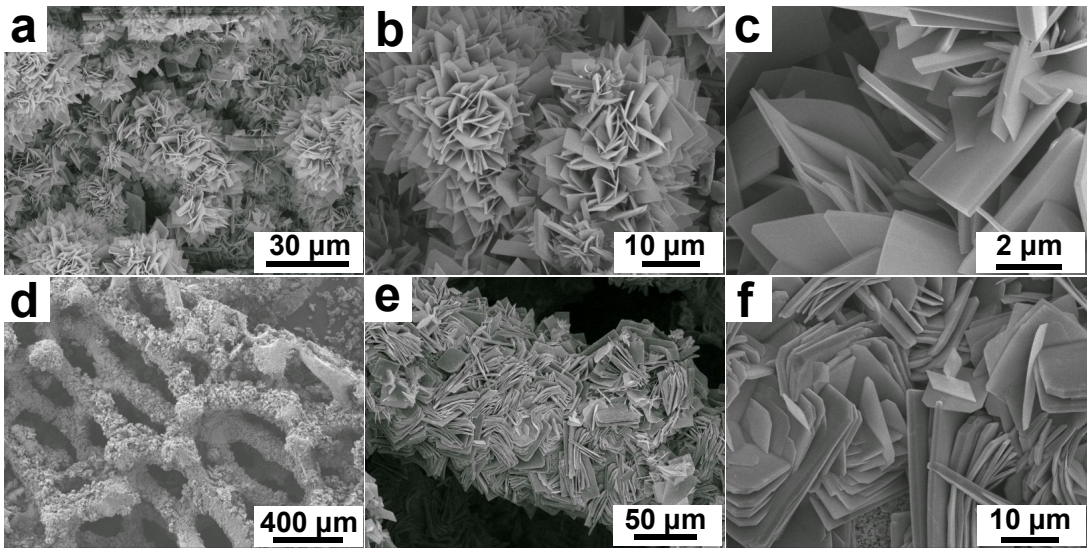

Fig. S1 FESEM images with different magnification of hierarchical transition-metal vanadate nanosheets prepared on copper foil (a-c) and copper foam (d-f).

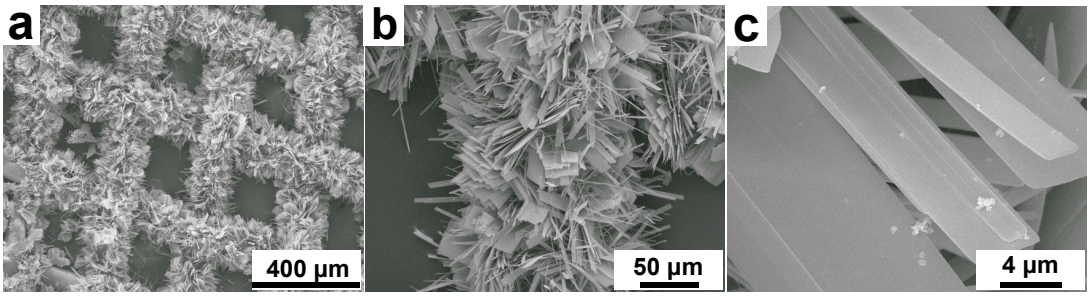

Fig. S2 FESEM images with different magnification of hierarchical transition-metal vanadate nanosheets prepared on Ni mesh.

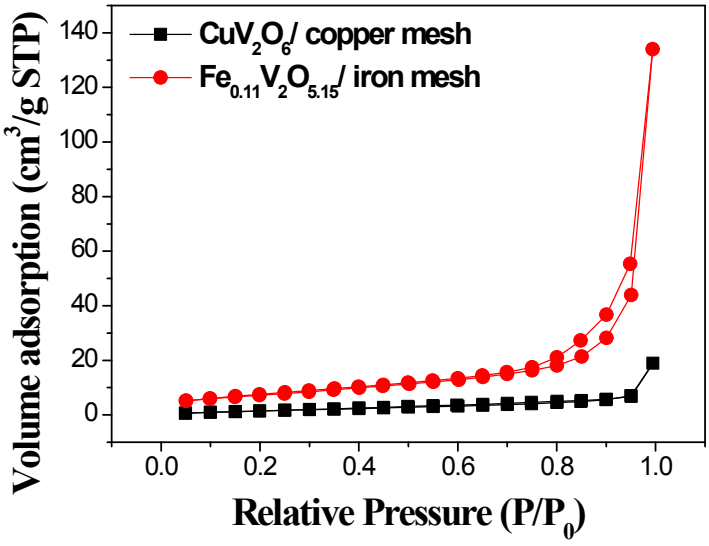

Fig. S3 N_2 adsorption–desorption isotherms of the hierarchical transition-metal vanadate nanosheets prepared on copper mesh and iron mesh.

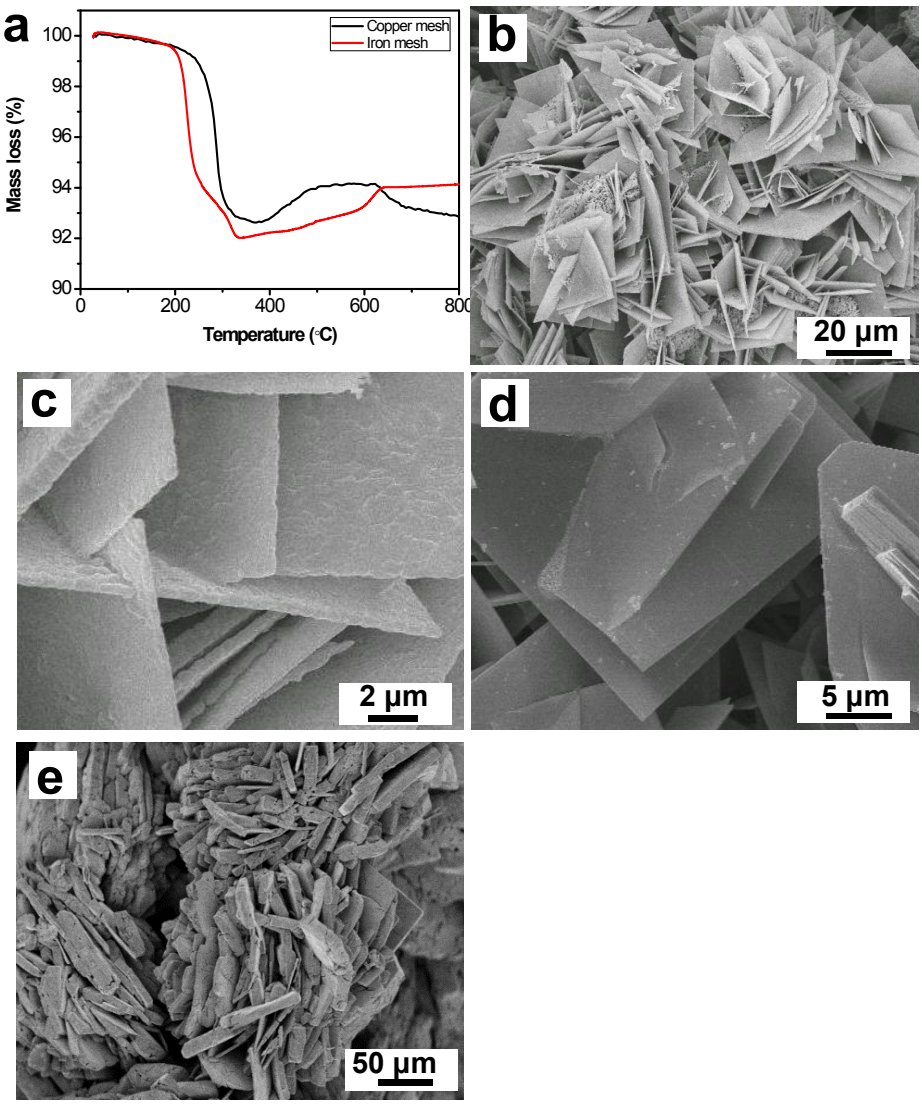

Fig. S4 Thermal analysis of hierarchical transition-metal vanadate nanosheets prepared on copper mesh and iron mesh (a). FESEM images with different magnification of hierarchical transition-metal vanadate nanosheets prepared on Cu mesh after (b,c) and before (d) heat treatment, and on iron mesh after heat treatment (e).

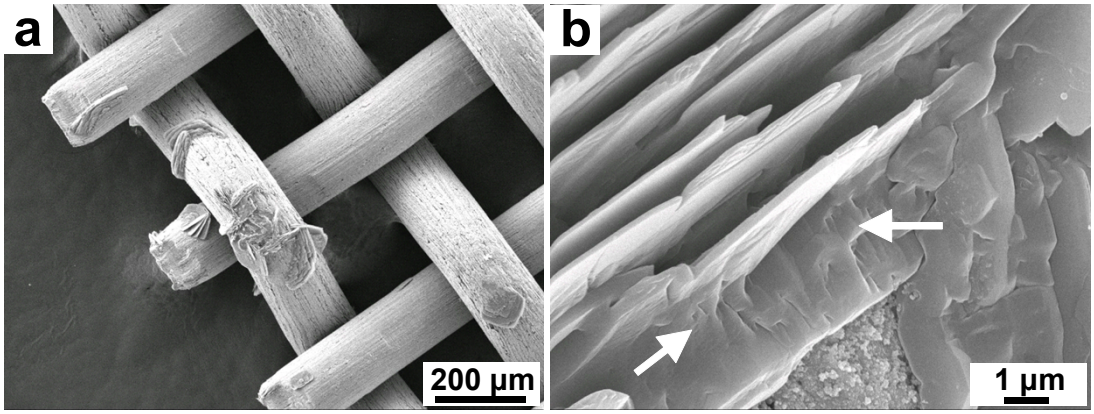

Fig. S5 FESEM images of the hierarchical iron vanadate nanosheets prepared on iron mesh at 1h.

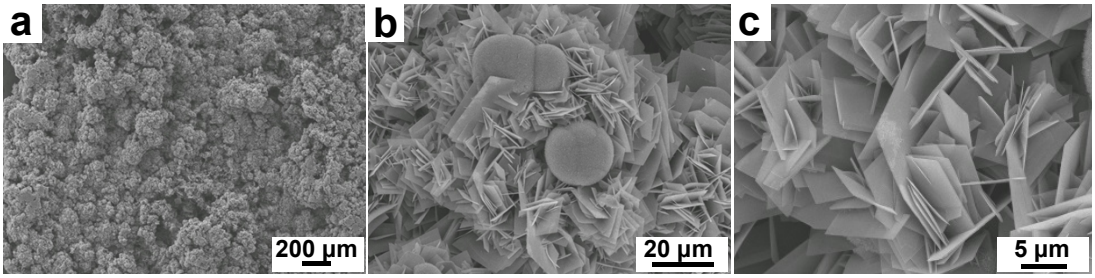

Fig. S6 FESEM images with different magnification of hierarchical transition-metal vanadate nanosheets prepared on copper mesh after 72 h of reaction.

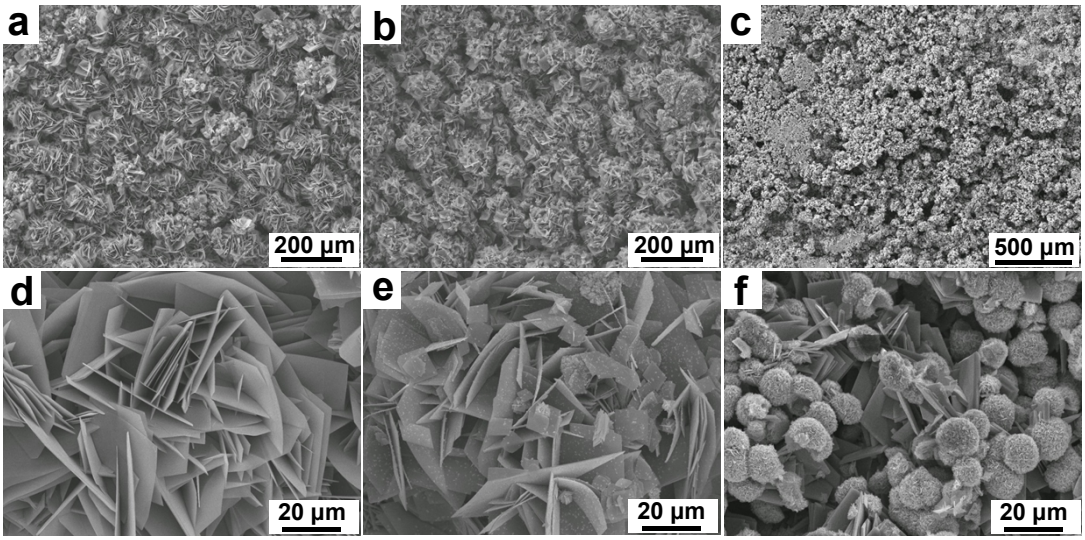

Fig. S7 FESEM images of hierarchical transition-metal vanadate nanosheets prepared on copper foil prepared with 2 mL (a, d), 4 mL (b, e) and 8 mL (e, f) of oxalic acid.

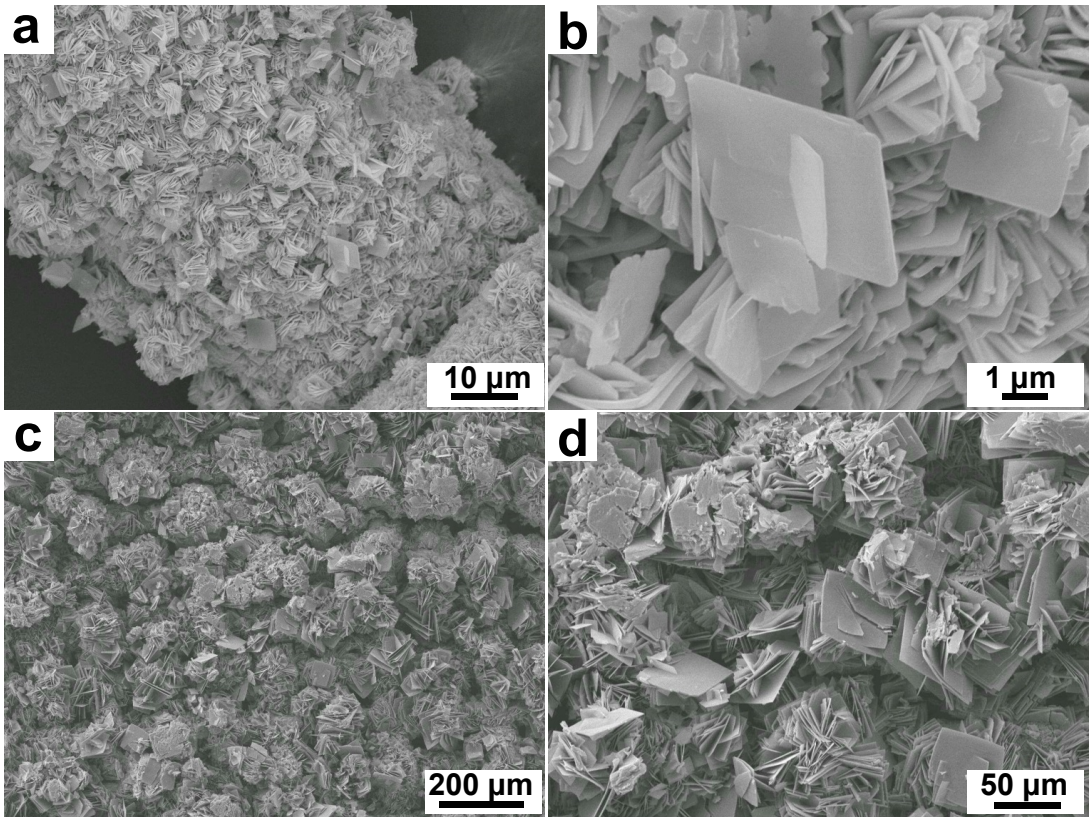

Fig. S8 FESEM images of hierarchical transition-metal vanadate nanosheets prepared on copper foil prepared with 0.75 mmol (a, b) and 3.0 mmol (c, d) of NH_4VO_3.

Table S1 The apparent TOFs and specific TOFs for the $Fe_{0.11}V_2O_5$/Fe mesh estimated at different temperatures

T(°C)	150	200	225	250	275	300
TOF (h^{-1})	16.56	18.72	23.04	29.52	32.40	33.12

Note: 1. The true active sites was the surface enriched VO_x species.

The TOF (h^{-1}) of NO can be calculated by the following equation:

$$TOF = \frac{(Pv / RT)X_{NO}}{n_{VO_x}}$$

where P is the standard atmospheric pressure (1.01×10^5 Pa), v is the flow rate of NO (0.25 mL min^{-1}), R is the proportional constant (8.314 J mol^{-1} K^{-1}), T is the temperature (K), X_{NO} is the NO conversion of the catalyst (%), n_{VOx} is the molar amount of the VO_x species, assuming that the coverage of full monolayer of VO_x species over the transition-metal vanadate nanostructures was at 15.9 μmol m^{-2}.