Electronic Supplementary Information

CO_x-free hydrogen production via ammonia decomposition over molybdenum nitride-based catalysts

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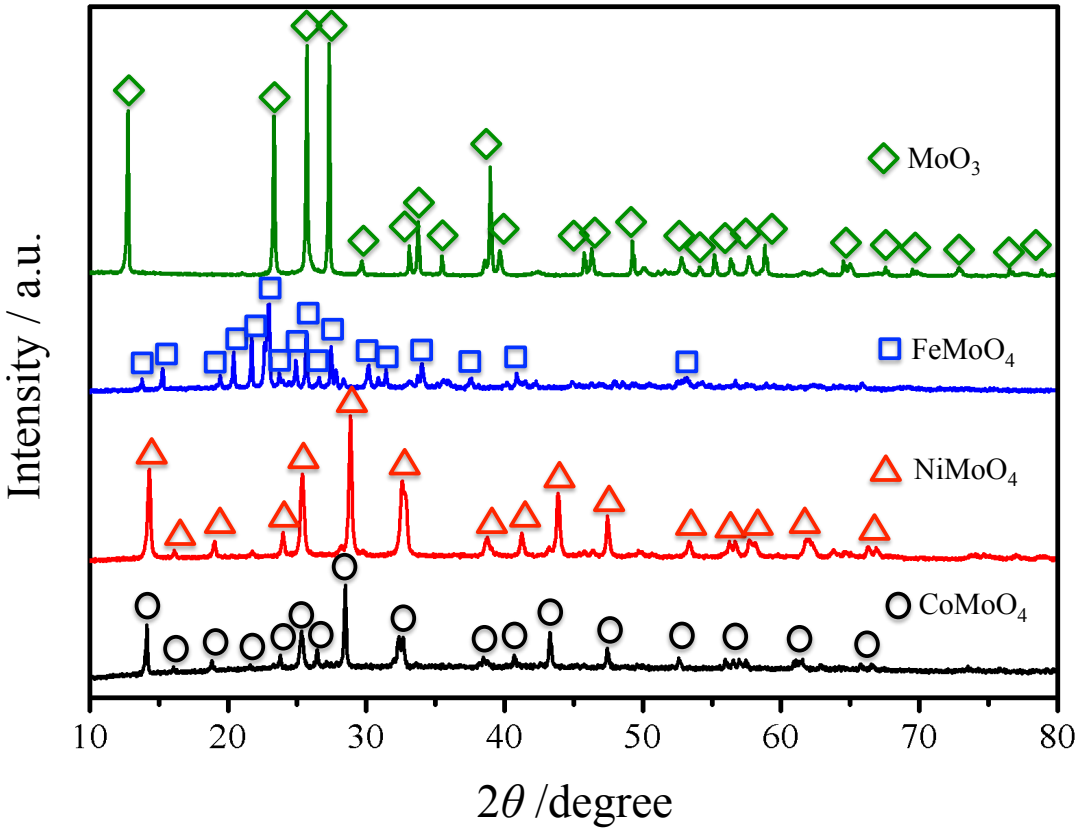

Fig. S1 XRD patterns of the synthesized $CoMoO_4$, $NiMoO_4$, $FeMoO_4$ and MoO_3

Table S1 BET surface area and pore volume of the MoO_3, $CoMoO_4$, $NiMoO_4$, and $FeMoO_4$

Catalyst	BET surface area[a] ($m^2\ g^{-1}$)	Total pore volume[b] ($cm^3\ g^{-1}$)
MoO_3	0.7	0.0011
$CoMoO_4$	15.1	0.0087
$NiMoO_4$	14.6	0.0074
$FeMoO_4$	6.3	0.0042

[a] BET surface area calculated from the adsorption branch of the N_2 isotherm

[b] Total pore volumes calculated from the N_2 adsorption at a relative pressure of 0.98

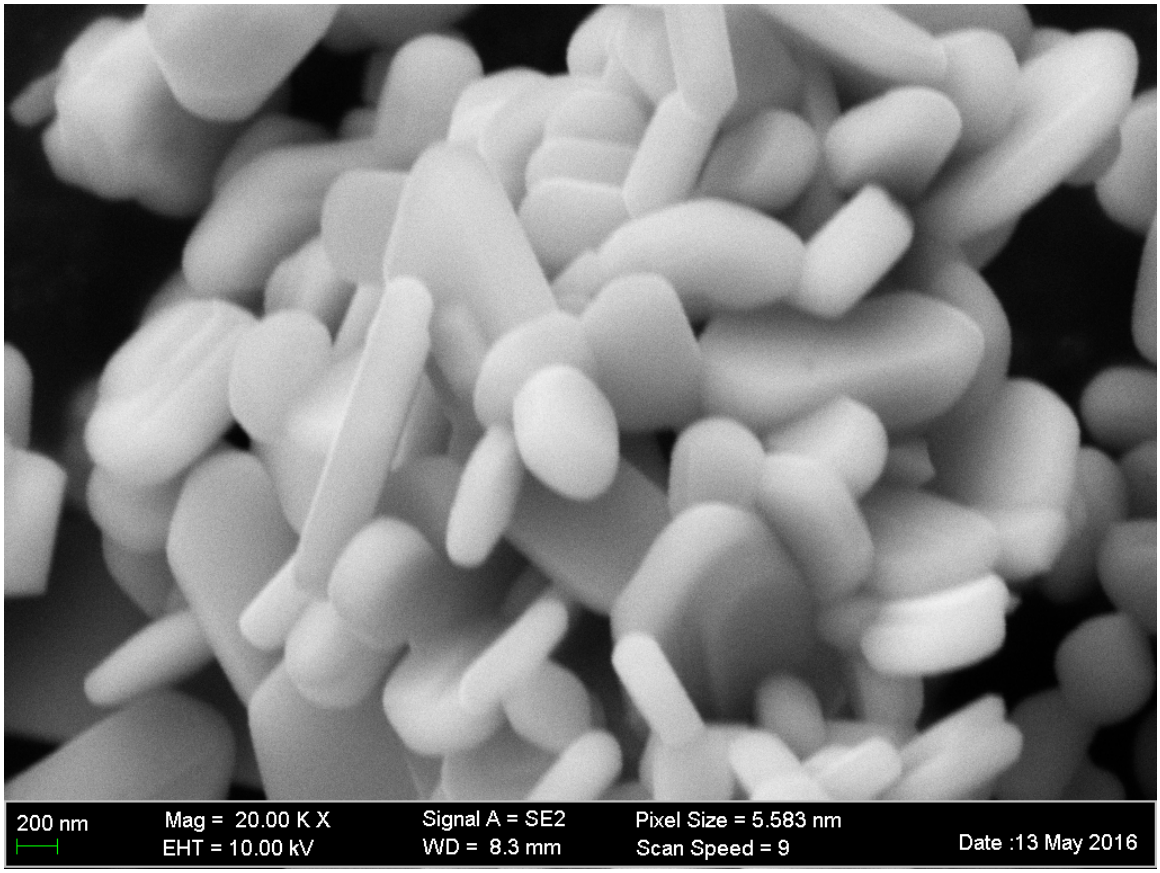

Fig. S2 SEM image of the MoO_3

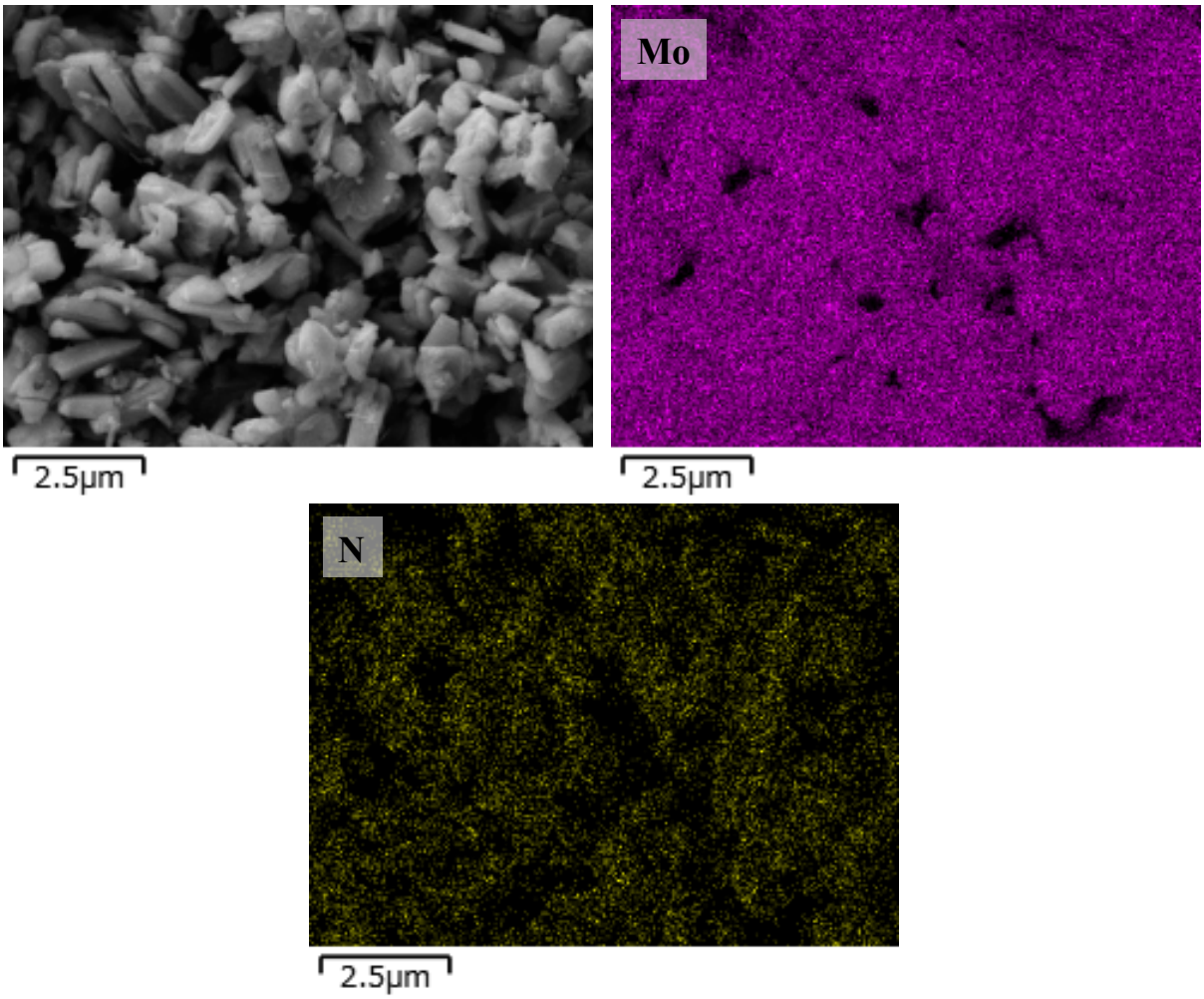

Fig. S3 SEM image and EDS mapping of the Mo_2N catalyst

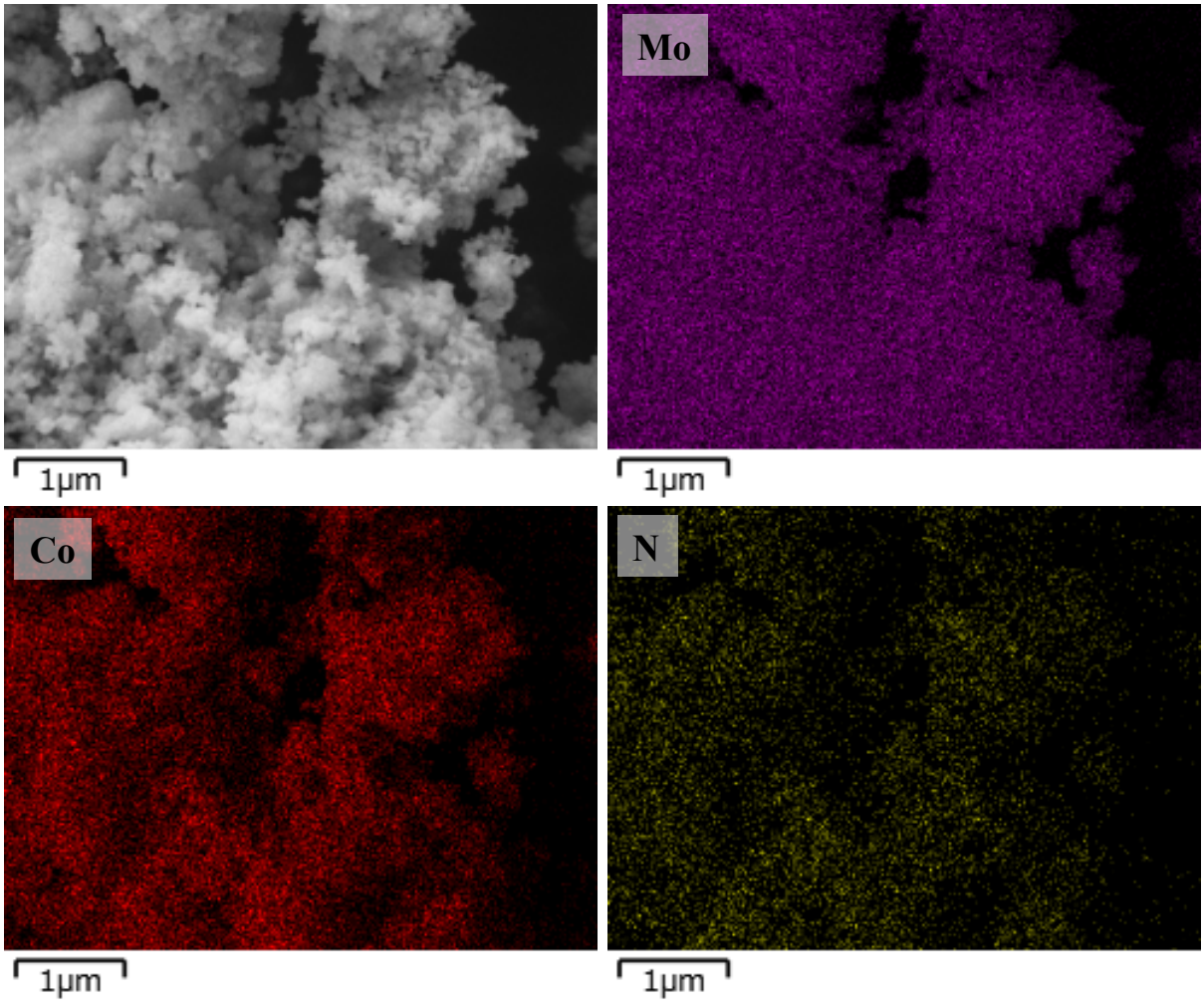

Fig. S4 SEM image and EDS mapping of the Co_3Mo_3N catalyst

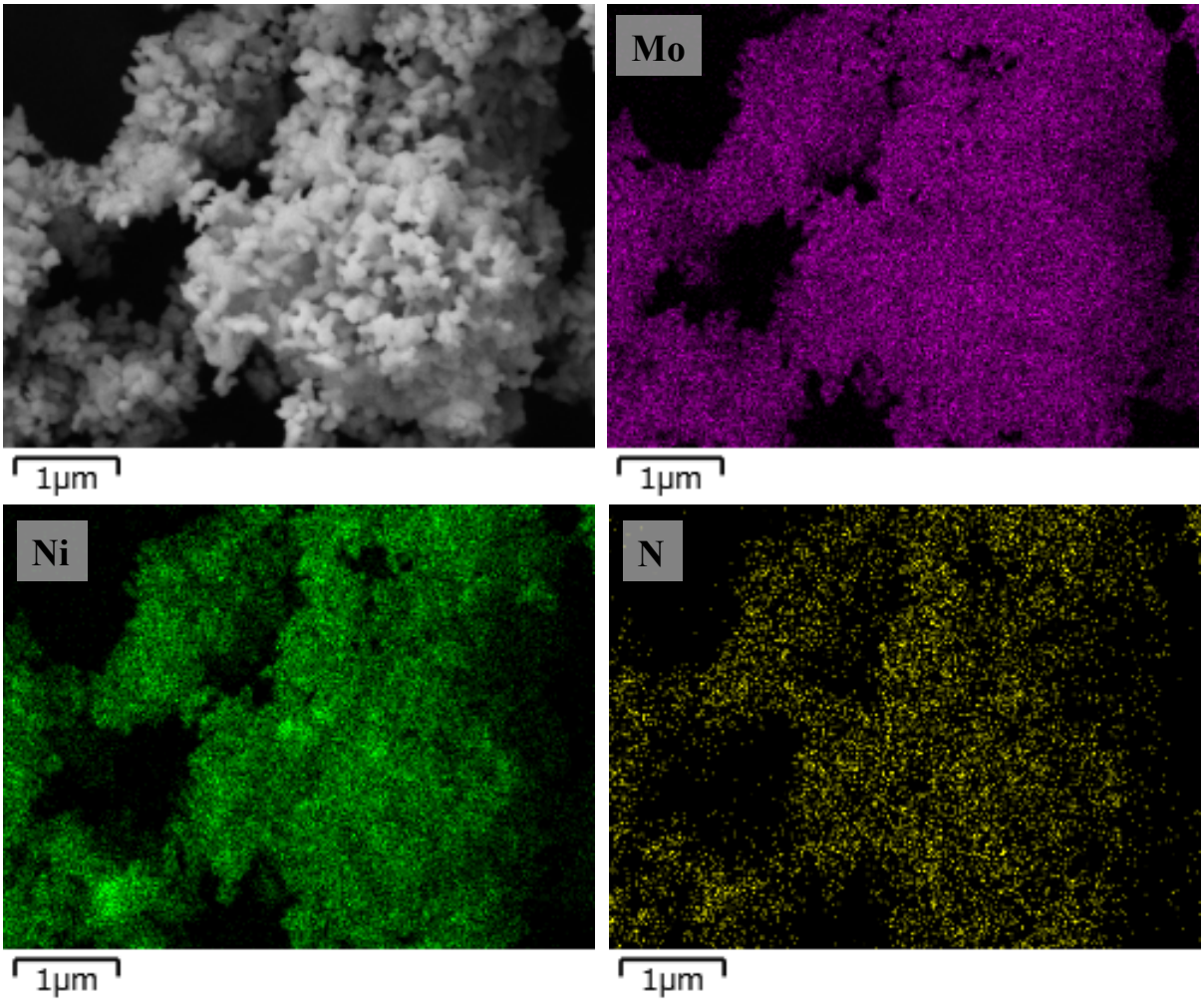

Fig. S5 SEM image and EDS mapping of Ni_3Mo_3N catalyst

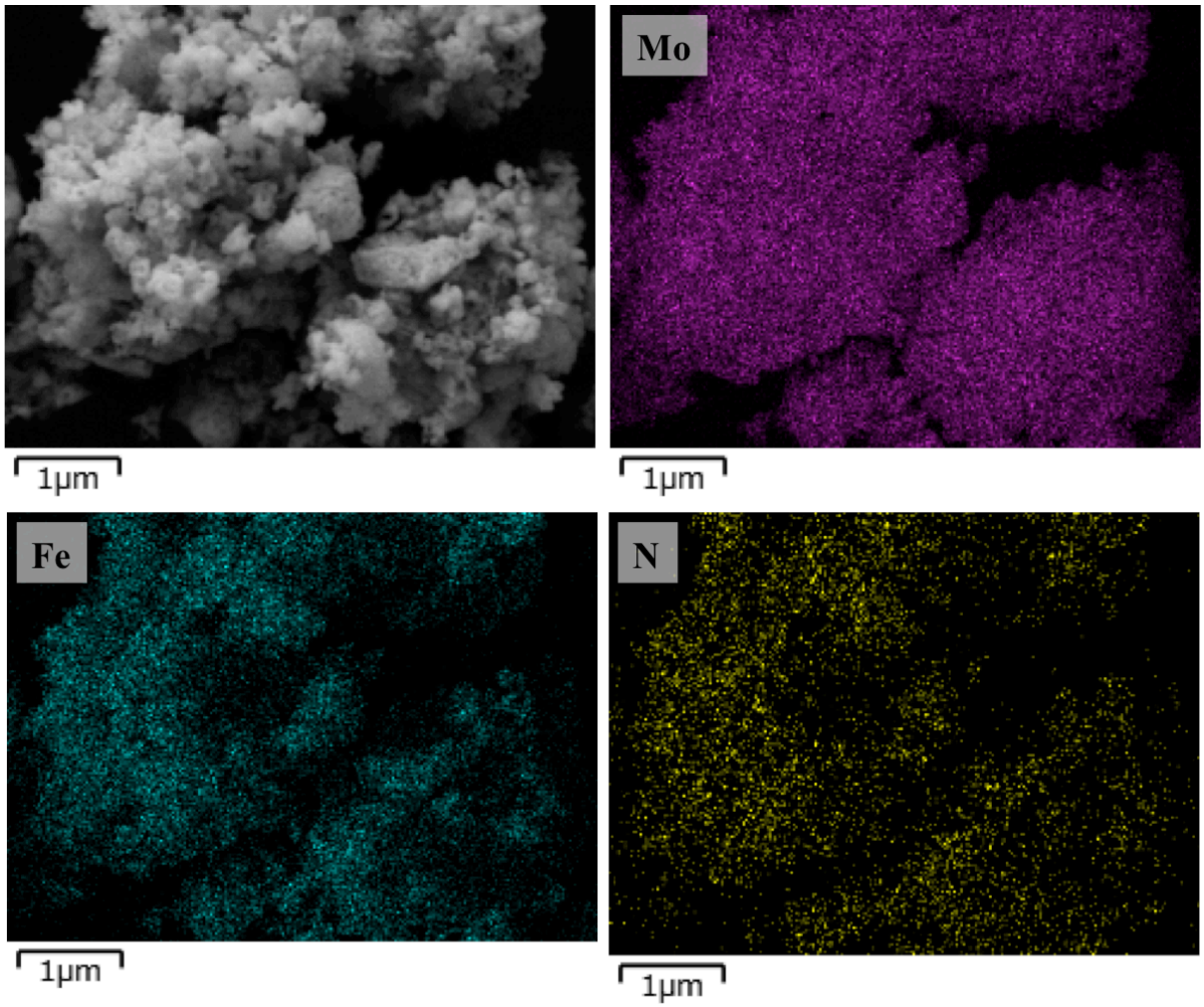

Fig. S6 SEM image and EDS mapping of the Fe_3Mo_3N catalyst

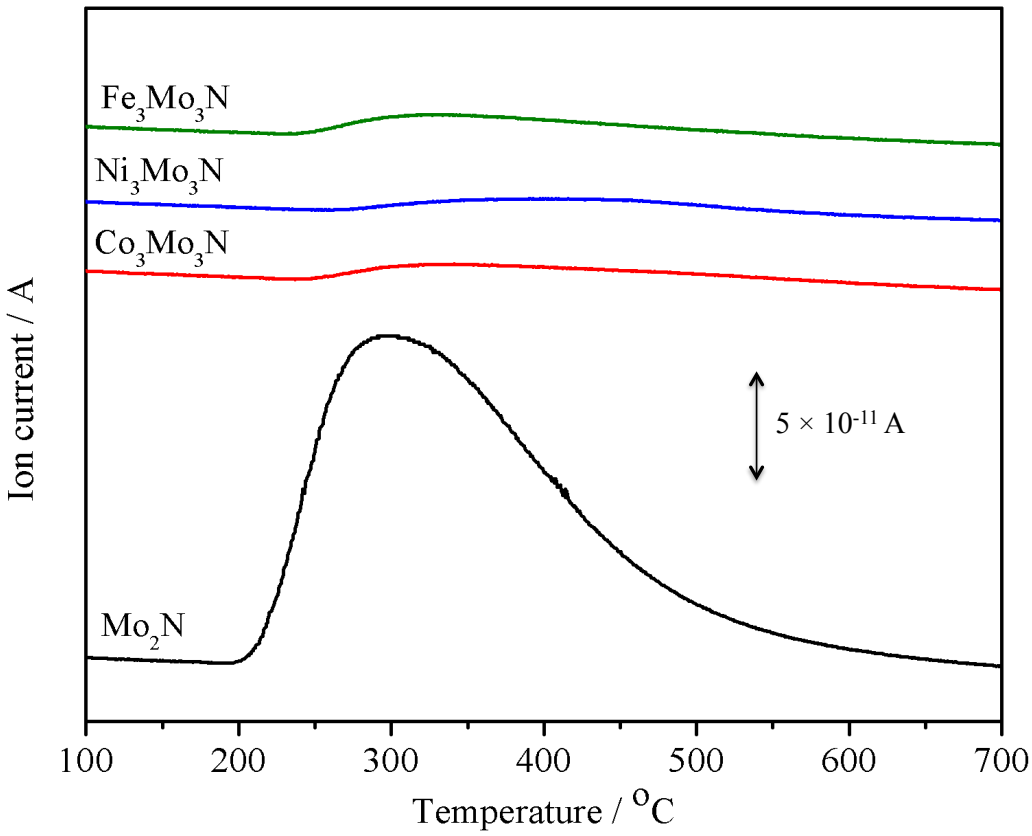

Fig. S7 Ammonia temperature-programmed desorption profiles of Mo_2N, Co_3Mo_3N, Ni_3Mo_3N, and Fe_3Mo_3N catalysts.

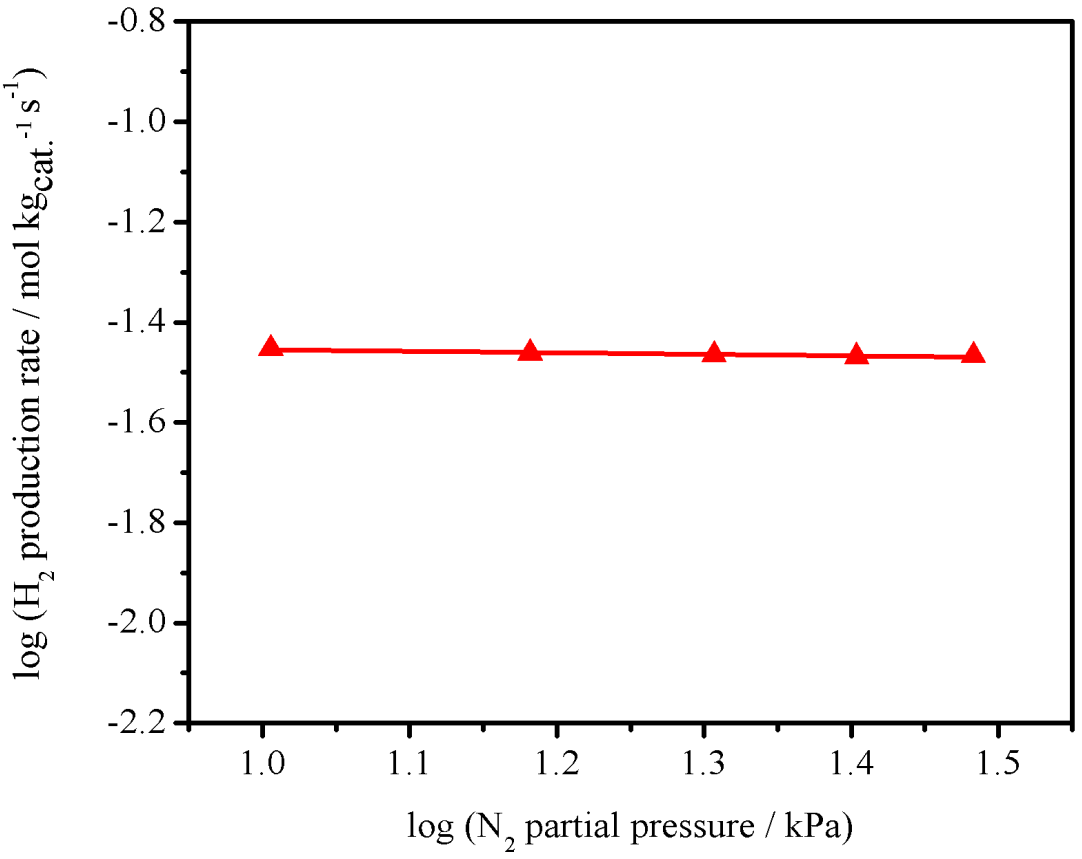

Fig. S8 Reaction orders of N_2 over the Co_3Mo_3N catalyst at 500 °C. The partial pressure of N_2 was varied from 10-30 vol.% at a constant space velocity of 10,000 l kg^{-1} h^{-1}.