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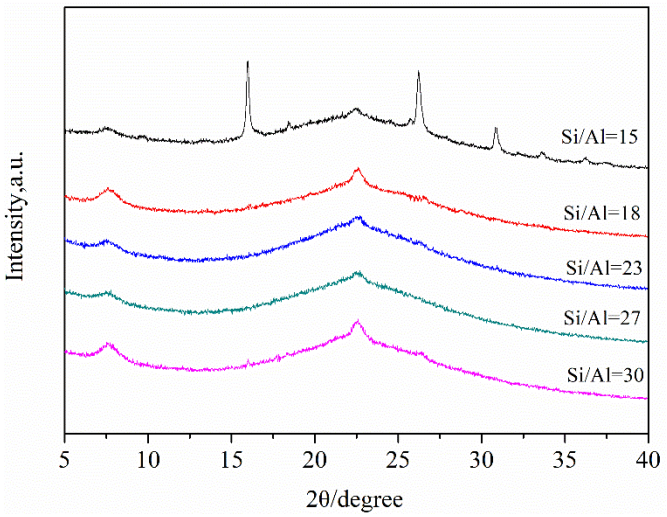

Fig. S1. XRD patterns of Hβ-*x* zeolites with different Si/Al ratios

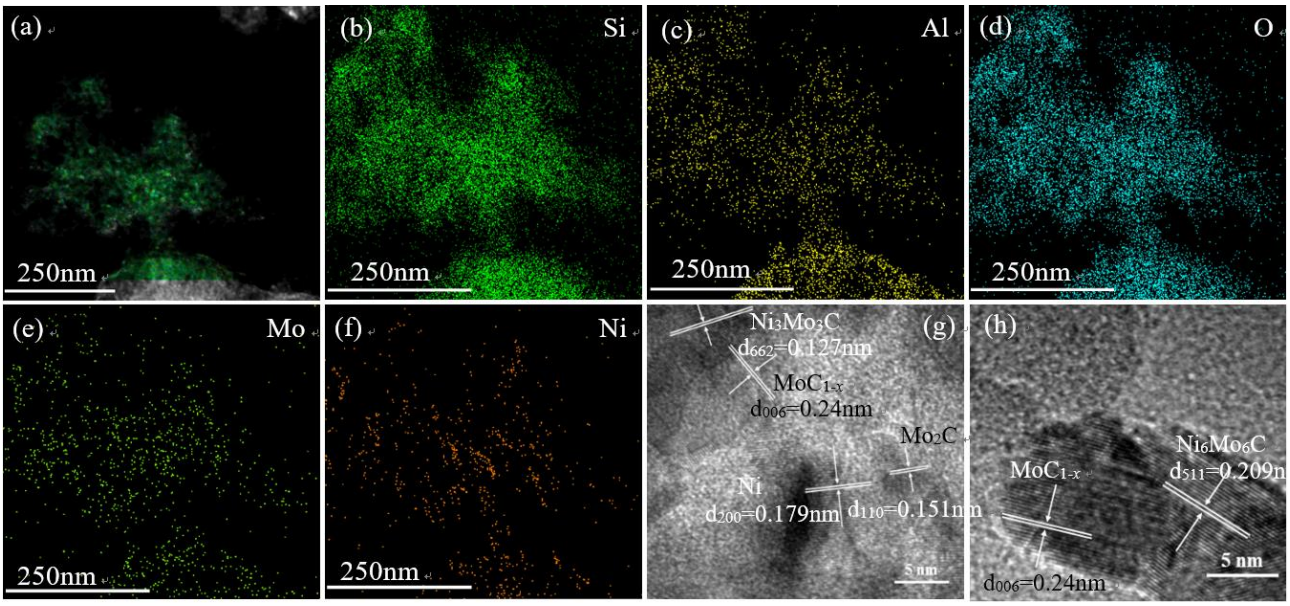

Fig. S2 The HRTEM images and the EDX elemental mapping analysis of NiMoC/Hβ-27 catalyst

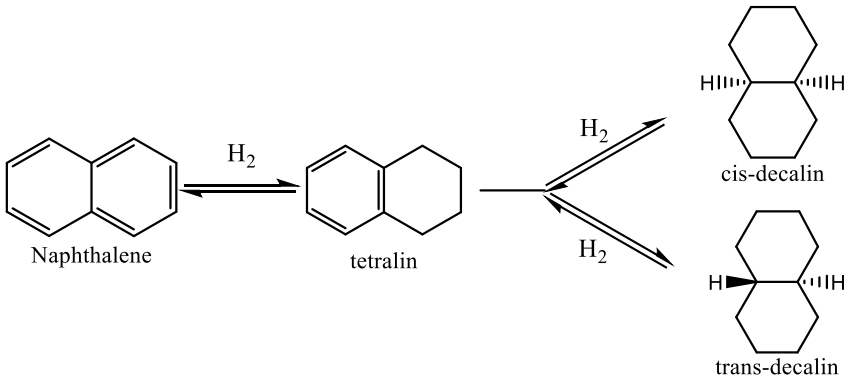

Fig. S3. The reaction path of naphthalene hydrogenation over NiMoC/Hβ-*x* catalysts

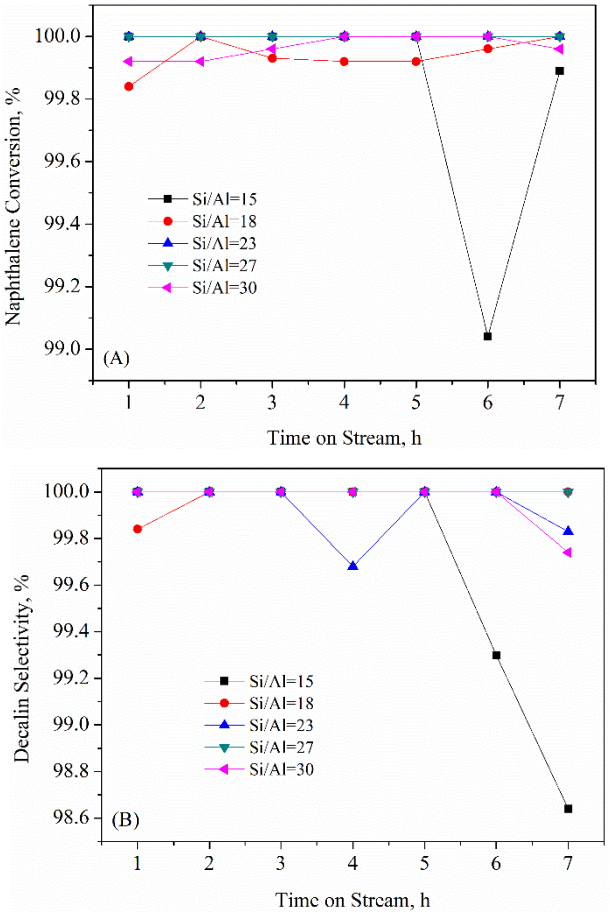

Fig. S4 Conversion of naphthalene (A) and decalin selectivity (B) over different catalysts at different reaction times. Feedstock was 5% naphthalene diluted in n-heptane. The reaction was performed at 225℃, LHSV = 2 h^{-1}, P(H_2) = 3MPa, ratio (H_2/Oil) = 600, and hydrogenated product was collected every hour.

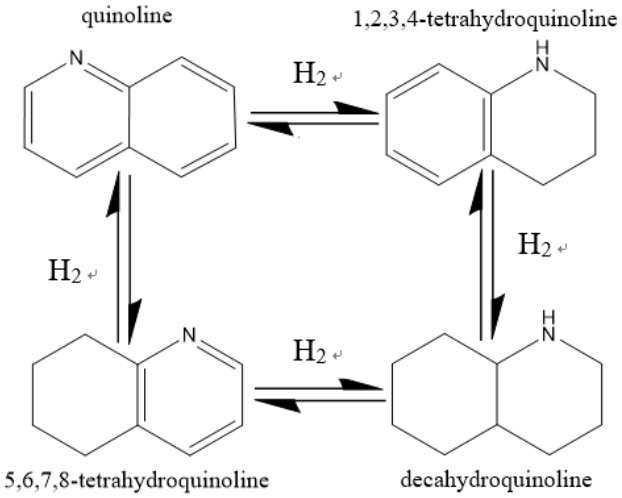

Fig. S5 The reaction network of quinoline hydrogenation in the presence of 5% naphthalene

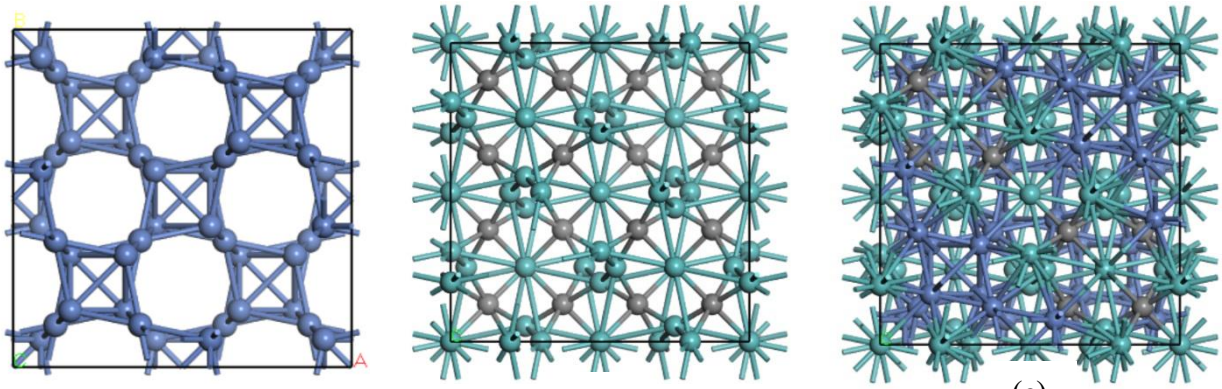

Fig. S6 The crystal structure of Ni_3Mo_3C phase. (a) a portion of the Ni subtructure of the Ni_3Mo_3C.(b) a portion of the Mo,C substructure of the Ni_3Mo_3C.(c) the structure of the Ni, Mo and C substructures combined.

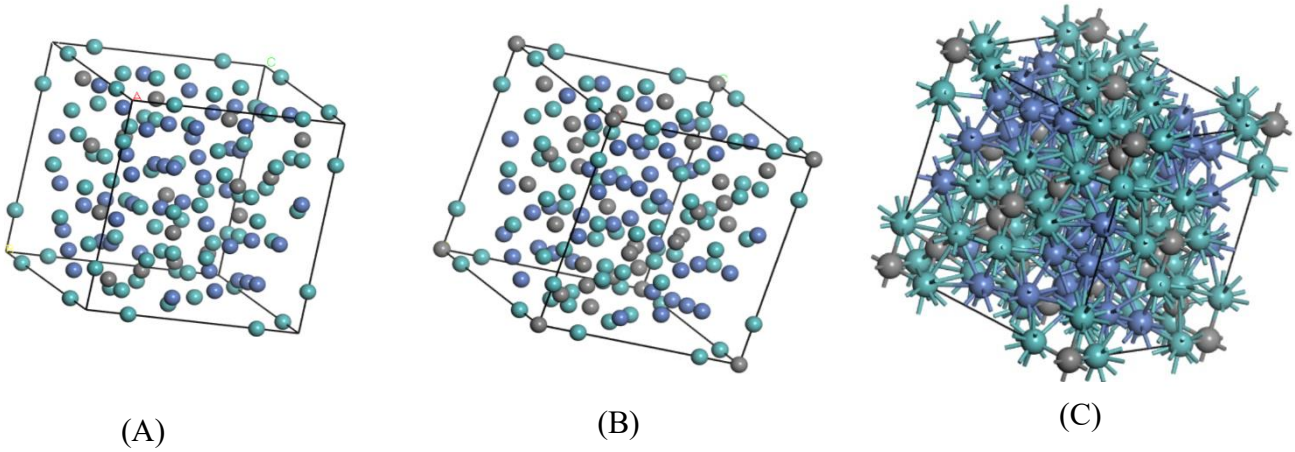

Fig. S7 The structure of the Ni_3Mo_3C phase(A) and Ni_6Mo_6C phase(B),(C).