

1. Experimental Section

1.2 Material characterization

Extended X-ray absorption fine structure (EXAFS) data of Co-MOR and CoFe-MOR were measured on beamline 4W1B at the Beijing Synchrotron Radiation Facility (BSRF). A spectral range of 7600 to 8450 eV from the K-absorption edge of Co (7715 eV) was collected under ambient conditions. Si(111) monochromator crystals were used and the XAFS spectra of adsorption samples were collected with a Lytle ionization detector in fluorescence mode due to the relatively low Co concentration in the catalysts. The fluorescence signal was filtered by a Cu foil and radial Soller slit assembly to reduce the elastically scattered radiation. An average of three scans was performed to achieve an adequate signal/noise ratio. The energy of the Co K-adsorption edge (7715 eV) was calibrated with Co foil.

The XAFS data were processed following the standard procedure of background absorption removal, normalization, conversion to k-space, and Fourier transformation, and then the EXAFS geometric information as extracted by use of the WinXAS 3.1 software package²⁴⁻²⁵ with Fourier filtering and shell fitting. A linear function fit for the pre-edge region and a second-order polynomial fit in the post-edge region were used for normalization to remove the background absorption. Subsequently for EXAFS analysis, normalized spectra were converted to frequency (k) space by use of a cubic spline, weighted by k^3 , and weighted $k^3\chi(k)$ spectra were generated. The $k^3\chi(k)$ spectra, from 2.0 to 12.5 \AA^{-1} , were Fourier-transformed (FT) by use of a Bessel window function with smoothing parameter of 4 to produce the radial structure

function (RSF) in R-space. The structural parameters of adsorption samples and cobalt oxide reference were determined by fitting theoretical phase-shift and amplitude functions of Co-O and Co-Co scattering paths calculated by ab initio FEFF8.2 code for the cluster of CoO and Co₂SiO₄.

Table S1 Comparison of catalytic activity of CoFe-MOR with the best zeolitic catalysts for N₂O decomposition

Catalyst	GHSV(h ⁻¹) <i>P</i> (bar)	Feed composition	<i>T</i> (K) <i>X</i> (N ₂ O)(%)
Fe-USY ¹²	30,000,1	10% N ₂ O, 20%O ₂ , 2% H ₂ O in He	773K, 98
Co-MOR ²³	30,000,1	5000 ppm N ₂ O, 1000 ppm NO, 5% O ₂ , 2% H ₂ O in He	798K, 92
CoFe-MOR	30,000,1	5000 ppm N ₂ O, 1000 ppm NO, 5% O ₂ , 2% H ₂ O in He	693K, 90
Ir/Fe-USY ³⁰	30,000,1	5000 ppm N ₂ O, 700 ppm NO, 5%O ₂ , 2% H ₂ O in He	673, 95
[Fe,Al]MFI ³¹	60,000,1	1500 ppm N ₂ O, 400 ppm NO, 2%O ₂ in He	725, 90

P: total pressure, *T*: temperature, *X*(N₂O)=N₂O conversion

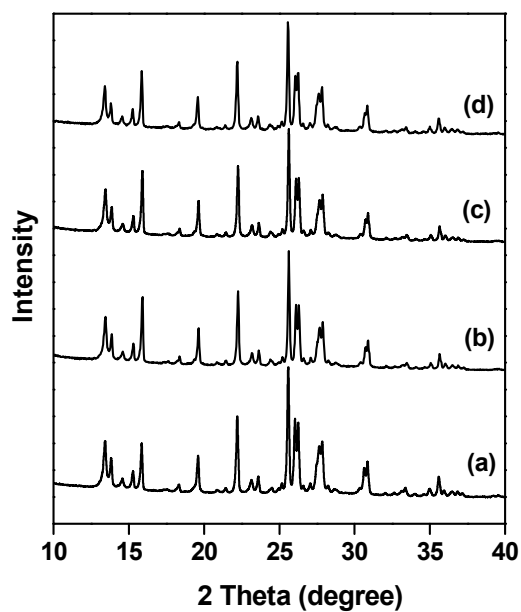


Fig. S1 XRD profiles of (a) Co-MOR, (b) CoFe-MOR, (c) FeCo-MOR and (d) Fe-MOR.

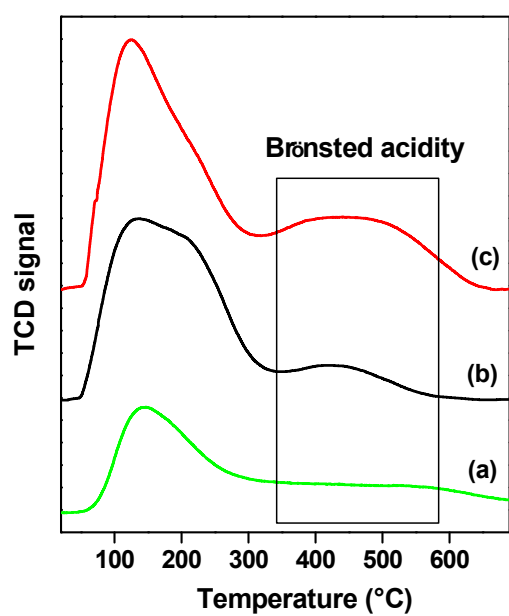


Fig. S2 NH₃-TPD profile of (a) CoFe-MOR, (b) Co-MOR and (c) H-MOR.