

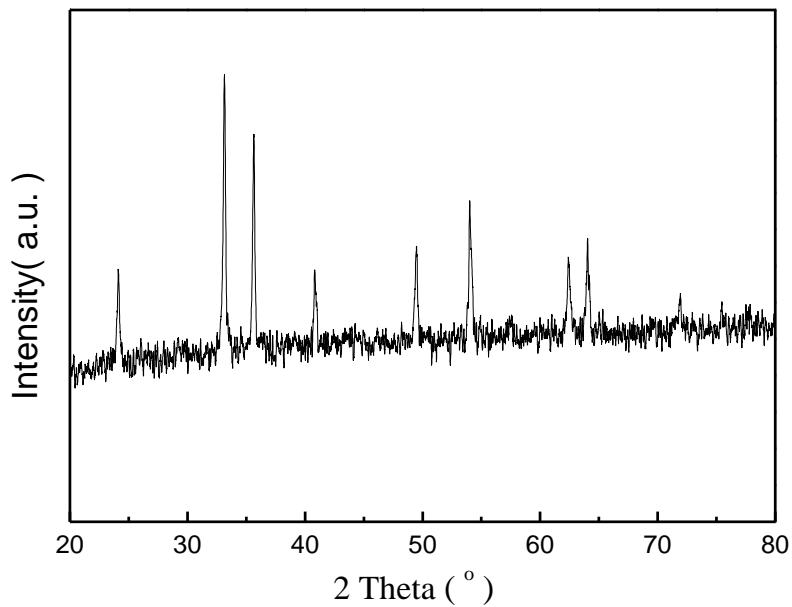


*Supplement of*

## **The effects of nitrate on the heterogeneous uptake of sulfur dioxide on hematite**

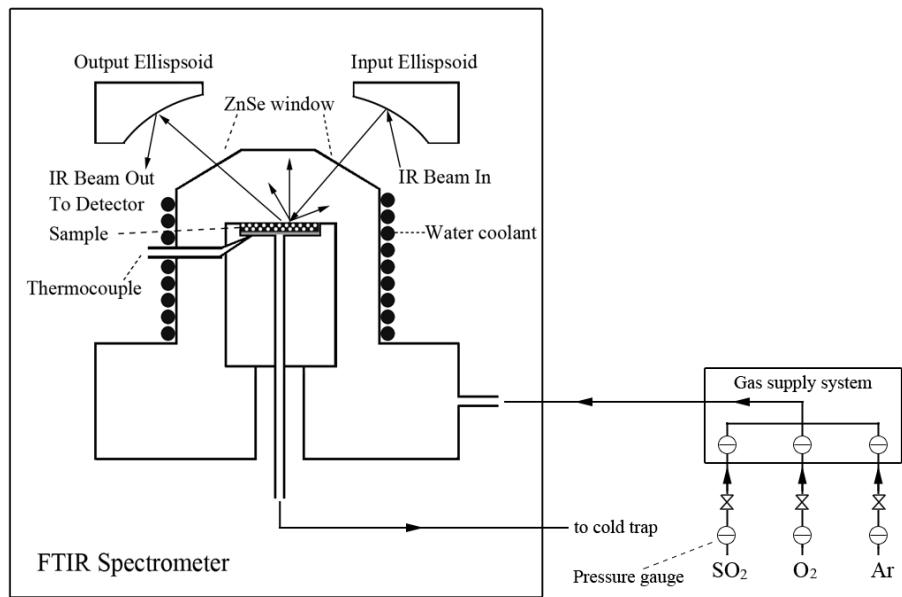
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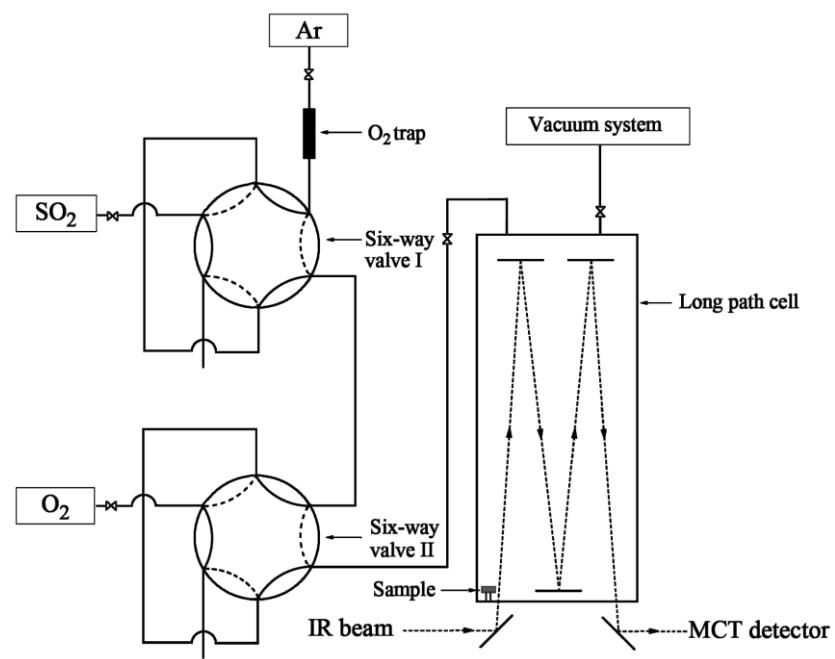


**Fig. S1.** XRD pattern of the synthesized sample.

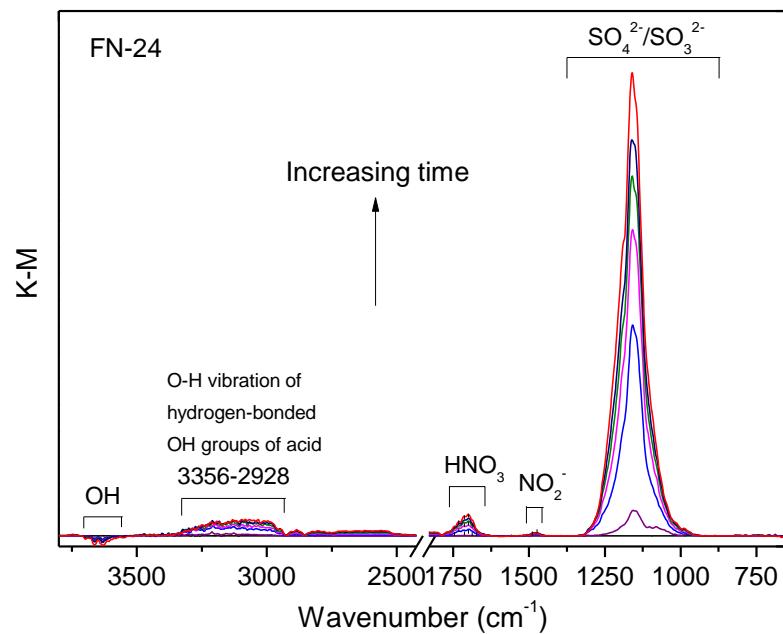
The synthesized sample presented some diffraction peaks in the wide angle X-ray diffraction region. These characteristic peaks that emerged can be indexed according to the hematite crystalline phase, and no other crystalline phase was found in the peaks, indicating that the synthesized sample was a fairly pure  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> sample.



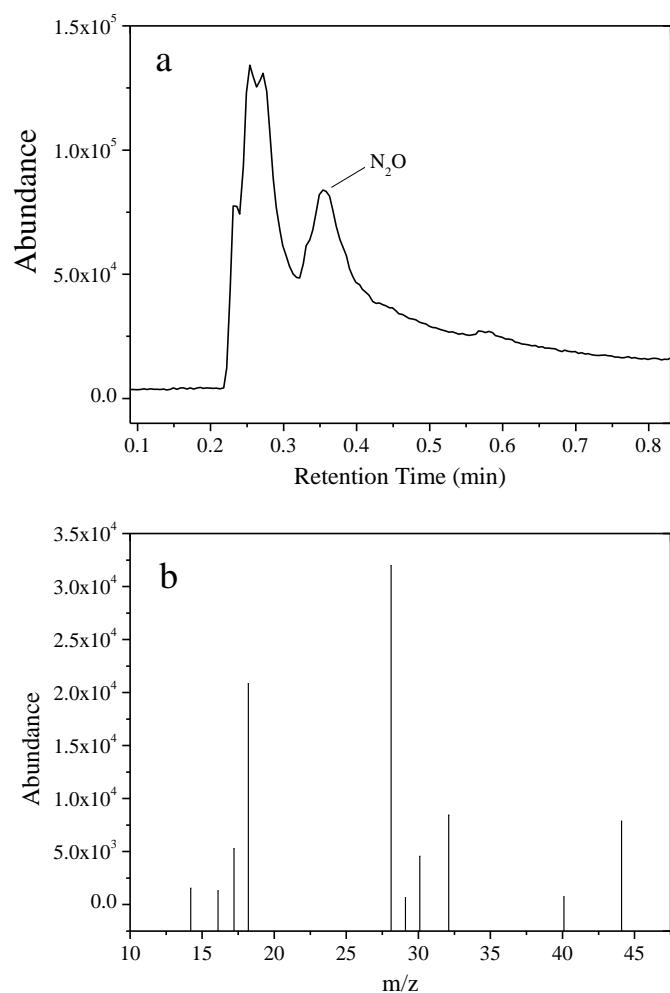
**Fig. S2.** Schematic diagram of DRIFTS apparatus



**Fig. S3.** Schematic diagram of White Cell-FTIR apparatus



**Fig. S4.** Peak height of the main peaks in different infrared spectral regions.



**Fig. S5.** Chromatogram (0.1-0.8 min) of the gas-phase sample collected from the heterogeneous reaction of  $\text{SO}_2$  on FN-24 in a closed glass bottle in the dark (a) and corresponding EI mass spectrum of  $\text{N}_2\text{O}$  (b).