Supplementary Information for:

Fe_2O_3/HY catalyst: A microporous material with zeolite-type framework achieving highly improved alkali poisoning-resistant performance for selective reduction of NO_x with NH_3

Yueyao Du, Zhiwei Huang, Jie Zhang, and Guohua Jing*

Department of Environmental Science & Engineering, College of Chemical Engineering, Huaqiao University, Xiamen, Fujian, China

*Corresponding author:

*E-mail: zhoujing@hqu.edu.cn (G. Jing)

Number of pages: 6

Number of tables: 1

Number of figures: 7

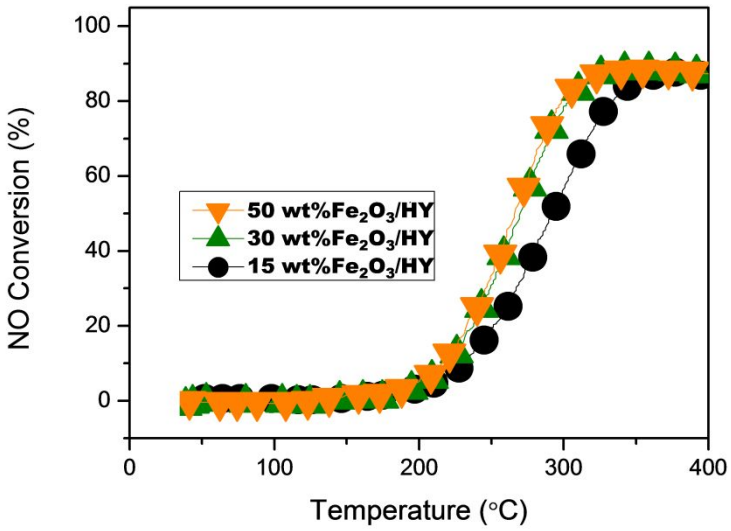


Figure S1. NH_3-SCR performance of Fe_2O_3/HY samples prepared at varying Fe_2O_3 weight loadings.

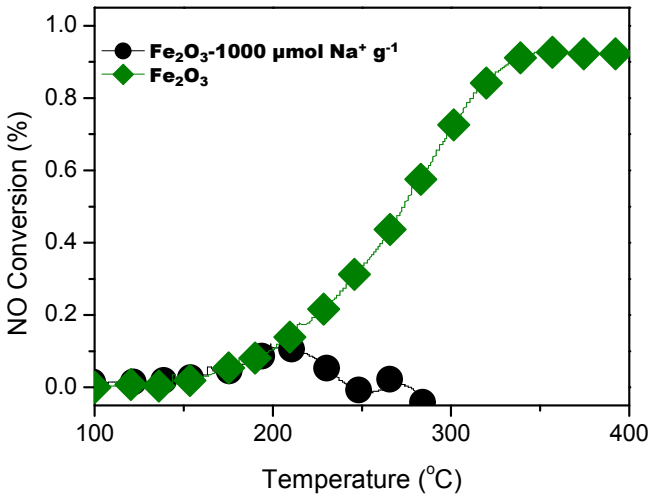


Figure S2. NH_3-SCR performance of Fe_2O_3 catalyst before and after 1000 μmol Na^+ g^{-1} poisoning.

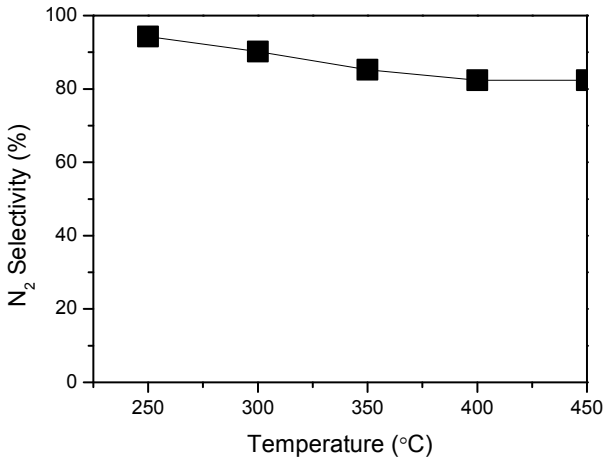


Figure S3. The N_2 selectivity over the Fe_2O_3/HY catalyst.

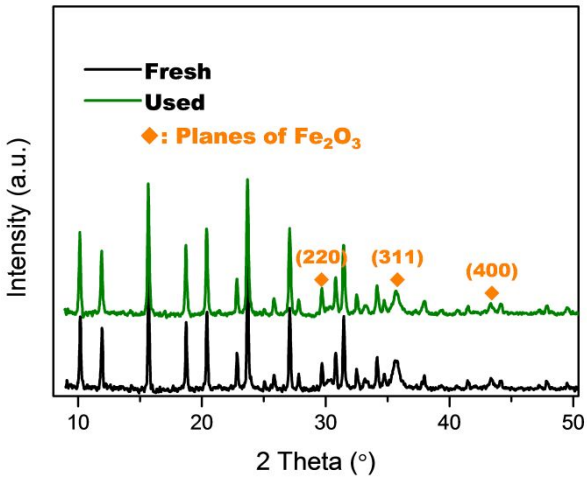
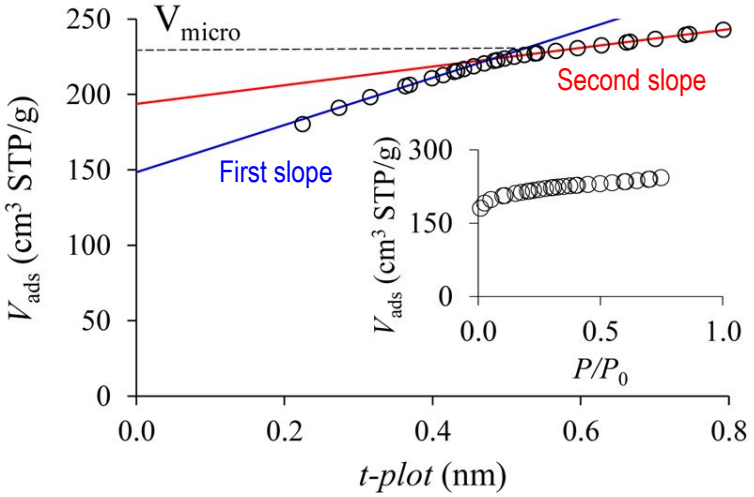


Figure S4. XRD patterns of Fe_2O_3/HY before and after NH_3-SCR reaction.



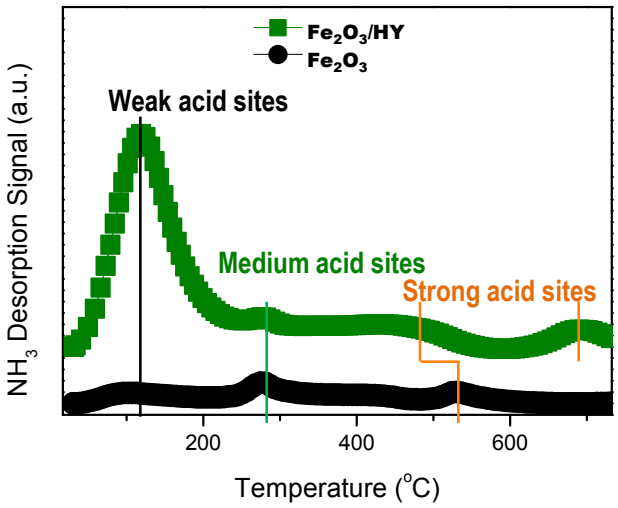
40

41 **Figure S5.** t-plot for catalyst. The inset is the raw data of the N_2 adsorption isotherm

42 at K which was used to obtain t-plot. The first and second slops provide estimation of

43 total surface area and microporesd volume of catalyst, respectively.

44



45

46 **Figure S6.** NH_3-TPD profiles of Fe_2O_3/HY in comparison with that of the Fe_2O_3.

47

48

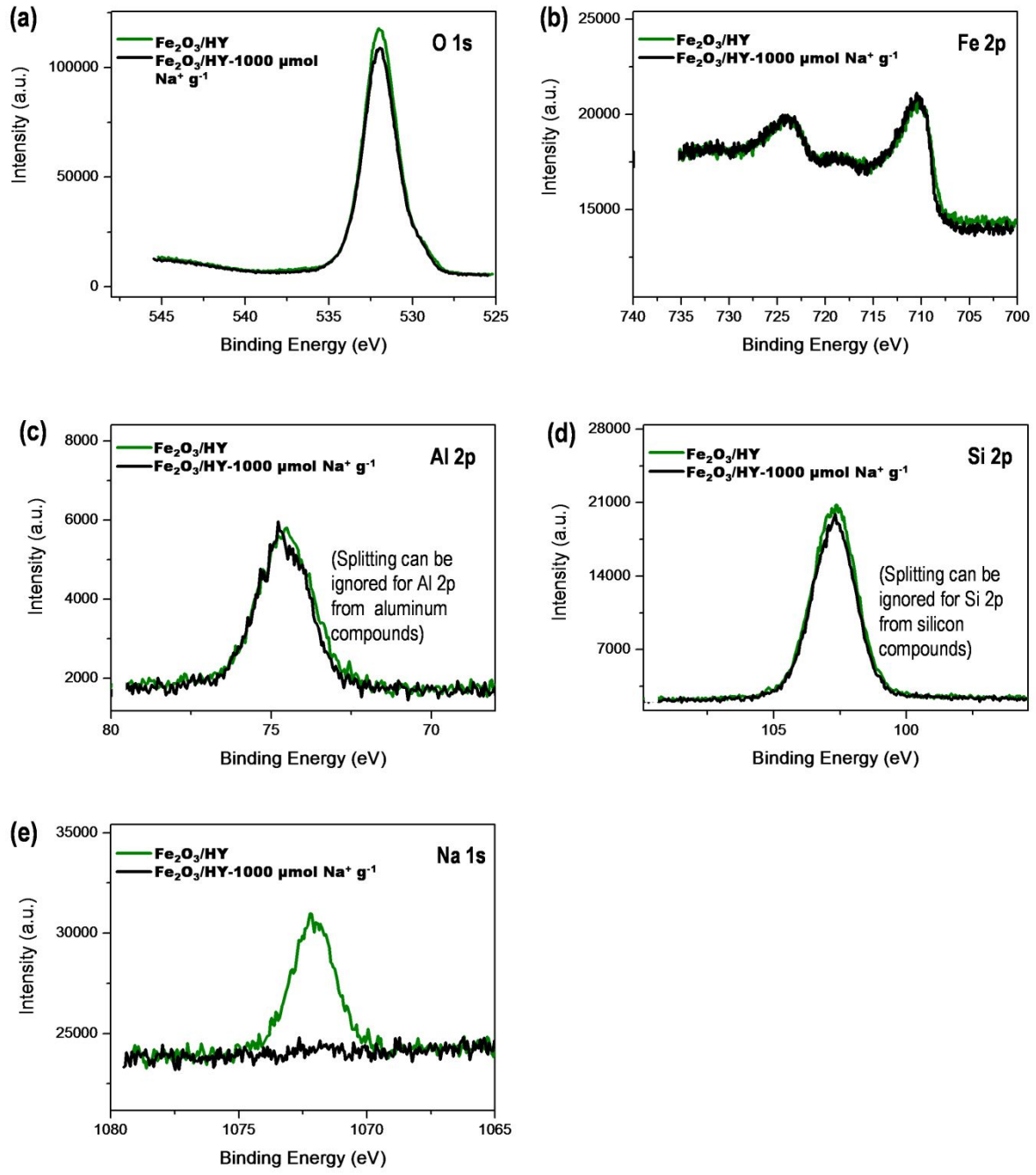


Figure S7. O, Fe, Al, Si, and Na XPS spectra for Fe_2O_3/HY before and after Na^+ poisoning.

Table S1. The total surface area; Microporous area and external surface area of fresh and Na^+ poisoned samples.

Sample	Total Surface Area	Micropore Area	External Surface Area
	[m^2 g^{-1}]	[m^2 g^{-1}]	[m^2 g^{-1}]
Fe_2O_3/HY	459	401	58
Fe_2O_3/HY -1000 μmol Na^+ g^{-1}	444	381	63
V_2O_5/WO_3-TiO_2	64	5	59
V_2O_5/WO_3-TiO_2-1000 μmol Na^+ g^{-1}	44	7	37