catalysts

MDPI

Article

Revealing the Electronic Effects Between Pt and W on the Performance of Selective Catalytic Reduction of NO_x with H_2 over Pt-W/SSZ-13

Hongyan Zhao [1], Yan Li [2], Yan Huang [1], Jianli Wang [2], Yaoqiang Chen [2] and Haidi Xu [1,*]

[1] Institute of New Energy and Low-Carbon Technology, Sichuan University, Chengdu 610207, China; zhaohongyan@stu.scu.edu.cn (H.Z.); huangyan1999@stu.scu.edu.cn (Y.H.)
[2] College of Chemistry, Sichuan Provincial Environmental Protection Environmental Catalytic Materials Engineering Technology Center, Sichuan University, Chengdu 610064, China; ly@stu.scu.edu.cn (Y.L.); wangjianli@scu.edu.cn (J.W.); chenyaoqiang@scu.edu.cn (Y.C.)
* Correspondence: xuhaidi@scu.edu.cn; Tel./Fax: +86-28-85418451

 https://doi.org/10.3390/catal15030269

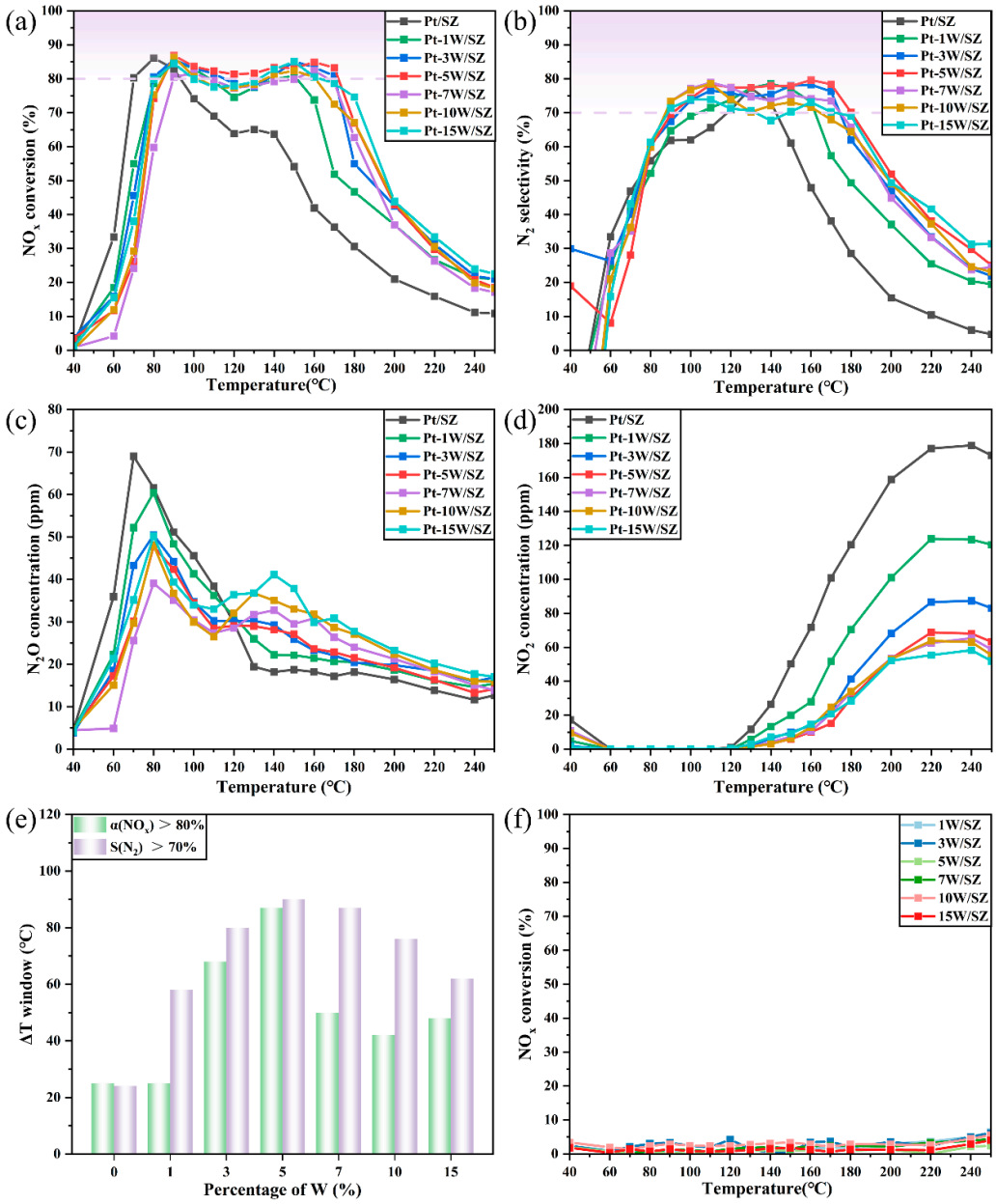


Figure S1. Catalytic performance of Pt/SZ and Pt-xW/SZ (x = 1, 3, 5, 7, 10, 15) catalysts: (a) NO_x conversion; (b) N_2 selectivity; (c) N_2O concentration; (d) NO_2 concentration; (e) The operating window of catalysts; (f) NO_x conversion of xW/SZ (x = 1, 3, 5, 7, 10, 15). Reaction conditions: 300 ppm NO, 2400 ppm H_2, 5% O_2 in N_2 balance, GHSV = 36,000 h^{-1}.

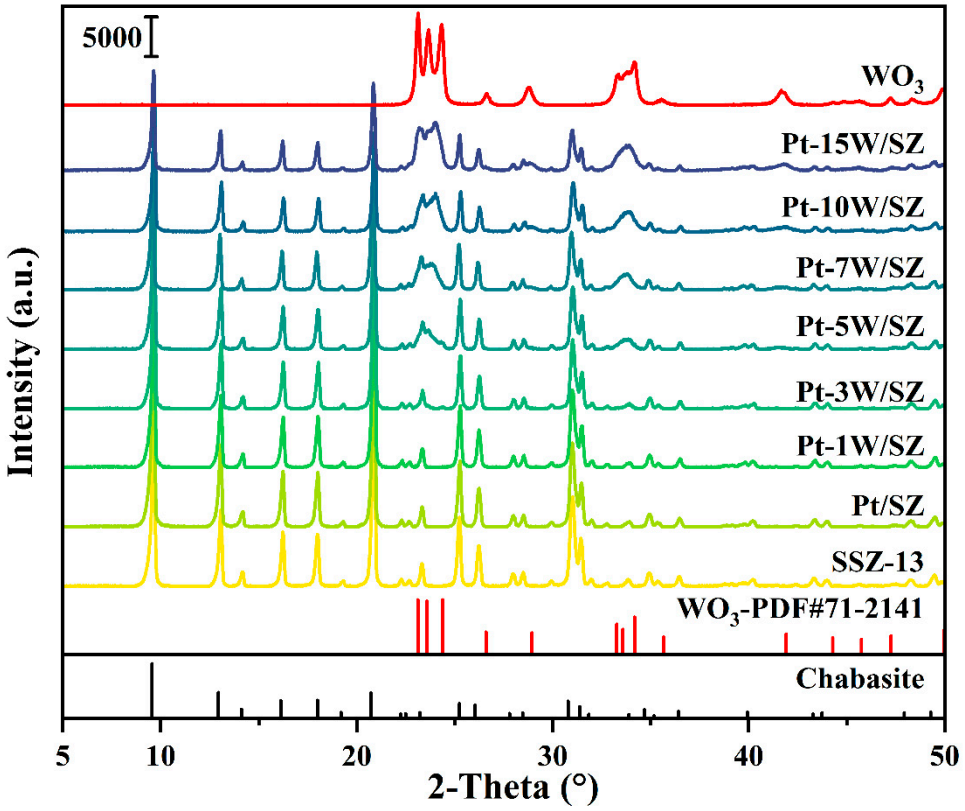


Figure S2. XRD patterns of SSZ-13, WO_3 and Pt-xW/SZ (x = 0-15) catalysts.

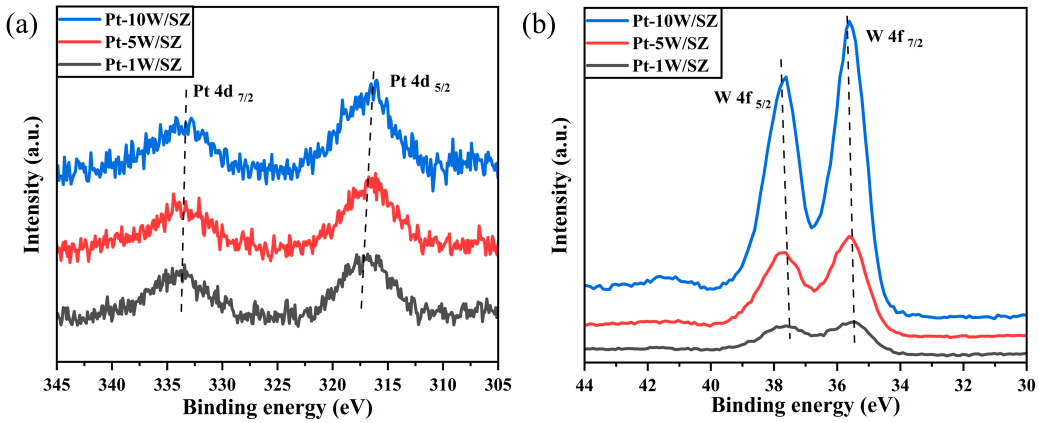


Figure S3. X-ray photoelectron spectra of Pt-xW/SZ (x = 1, 5, 10) catalysts: (a) Pt 4d; (b) W 4f.

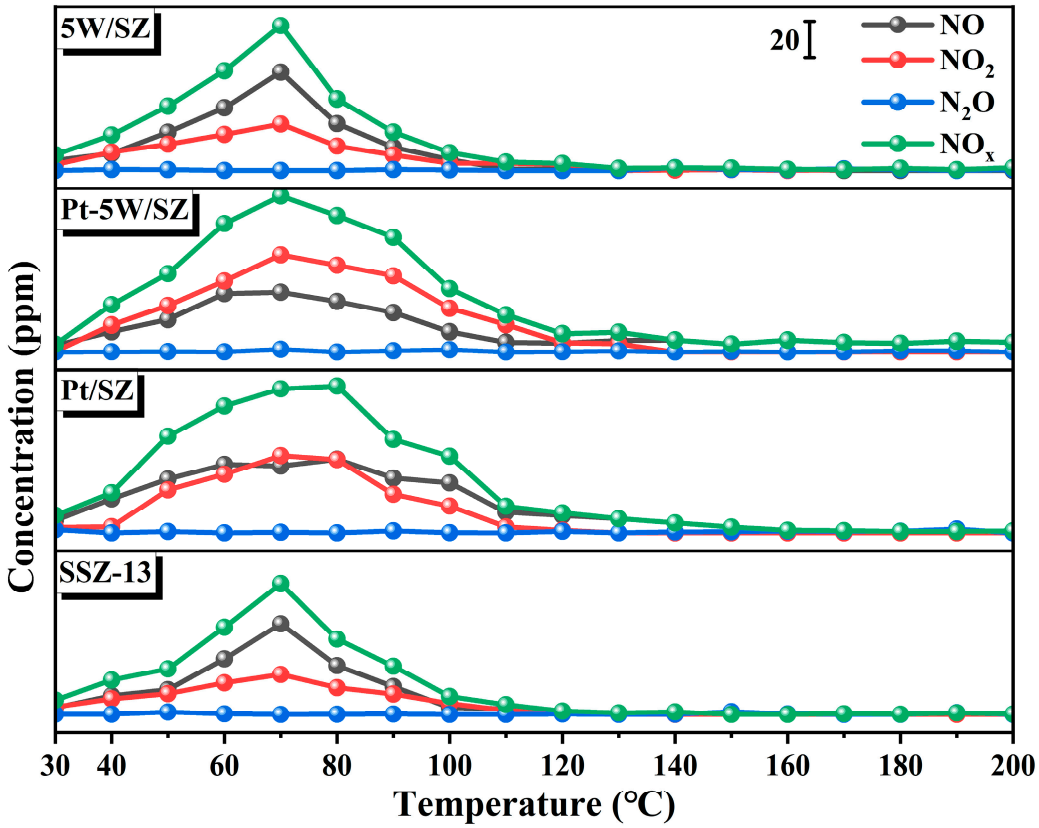


Figure S4. NO_x-TPD patterns of SSZ-13, Pt/SZ and Pt-5W/SZ. Gas composition: 300 ppm NO, 5% O_2 and N_2 balance.

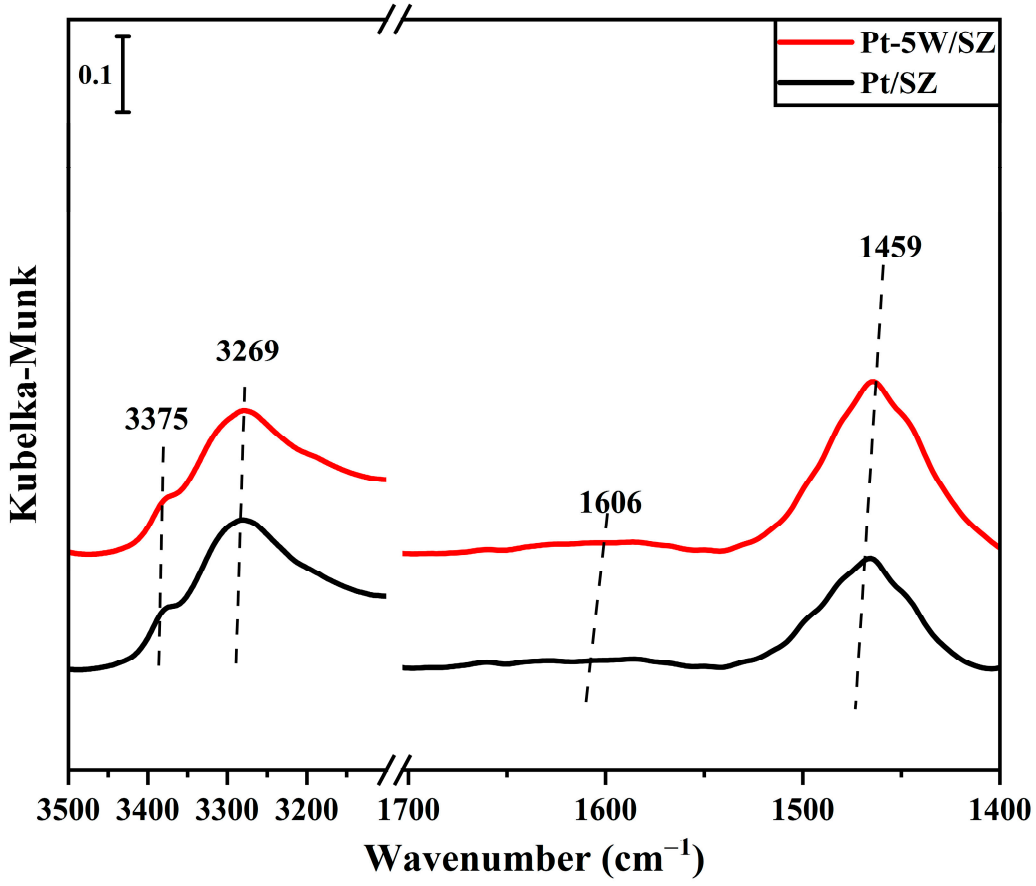


Figure S5. DRIFT spectra of NH_3 adsorption on Pt/SZ and Pt-5W/SZ catalysts.

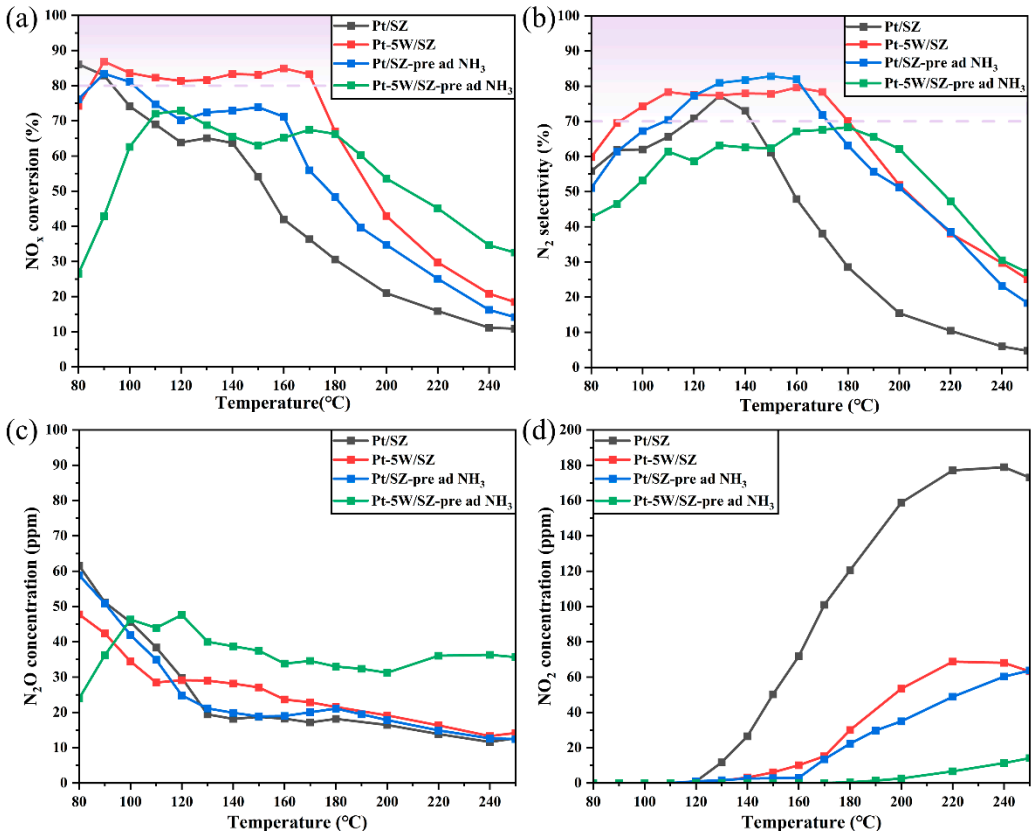


Figure S6. The H_2-SCR activity of the catalyst after pre-adsorption treatment: (a) NO_x conversion, (b) N_2 selectivity, (c) N_2O concentration, (c) NO_2 concentration Reaction conditions: 300 ppm NO, 2400 ppm H_2, 5% O_2 in N_2 balance, GHSV = 36,000 h^{-1}.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.