

Supplementary Information

A comparison study between V-SBA-15 and V-KIT-6 catalysts for selective oxidation of diphenylmethane

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Preparation of the catalysts

The V-SBA-15 (25) catalyst were synthesized by hydrothermally using ammonium metavanadate as a vanadium source. About 3.89 g triblock copolymer poly (ethylene glycol)-block-poly (propylene glycol)-block-poly (ethylene glycol)-(Pluronic P123, molecular weight = 5,800, EO₂₀-PO₇₀-EO₂₀, ALDRICH, USA) was dissolved in 30.0 g of distilled water and stirred for 3 h. Required amount of Tetraethyl orthosilicate (TEOS, MERCK 98%, USA) and amount of ammonium metavanadate (NH₄VO₃, SRL 97%, INDIA) were added directly to the polymer containing homogenous solution. The pH of the solution was adjusted to 3 by using 0.3 M HCl. The gel was transferred into the autoclave and heated for 24 h at 373 K for 48 h. The green solid was washed with distilled water and dried at 343 K for 12 h. The material was calcined at 773 K for 6 h. The same procedure was followed for V-KIT-6 catalyst, the only difference was the additional use of a co-surfactant (butanol).

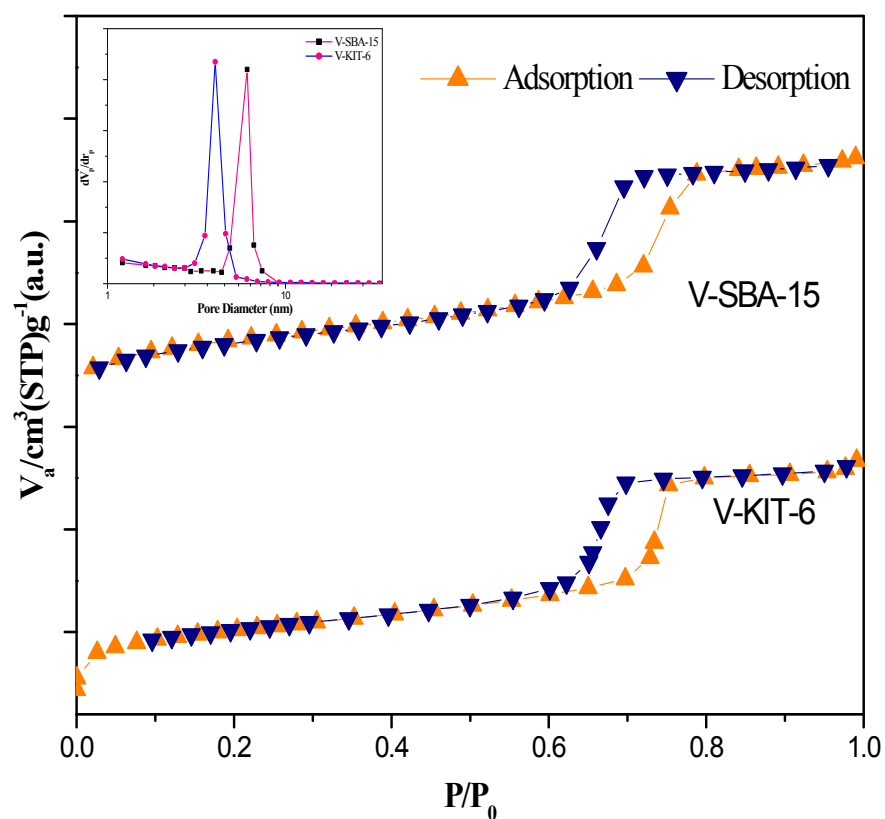


Figure S1 N₂ adsorption-desorption isotherms of Si-KIT-6 and V-KIT-6 catalysts; (BJH plot inserted in the Figure)

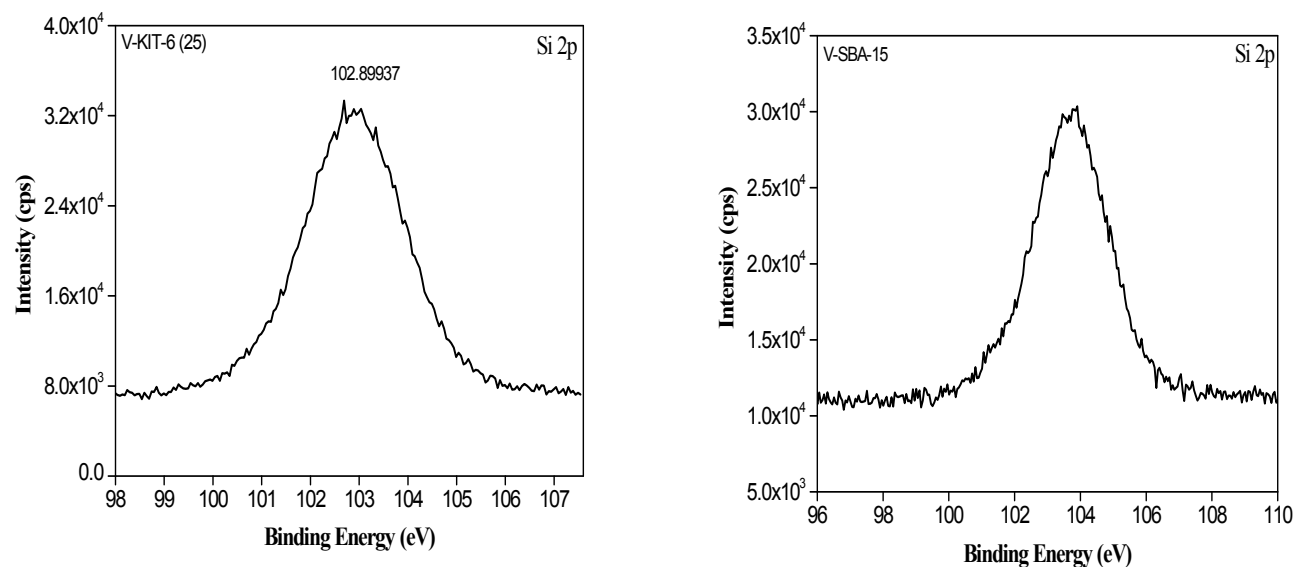


Figure S2 XPS spectra of Si₂P_{3/2} region of calcined V-KIT-6 and V-SBA-15 catalysts

Table S1 Textural properties of the catalysts

Catalysts	Vanadium content (wt.%)	'd' spacing	Wall thickness ^a (nm)	Unit cell parameter (a_0)
V-SBA-15	3.1	10.375	5.6	12.02 ^b
V-KIT-6	3.2	9.74	7.3	23.85 ^c

^aWall thickness = Unit cell parameter – Pore diameter

$$a_0 = \frac{2d_{(100)}}{\sqrt{3}}$$

^bUnit cell parameter values calculated using

^cUnit cell parameter values calculated using $a_0 = \sqrt{6} d_{(211)}$