

Supplementary information – Synthesis and methane cracking activity of a silicon nitride supported vanadium nitride nanoparticle composite

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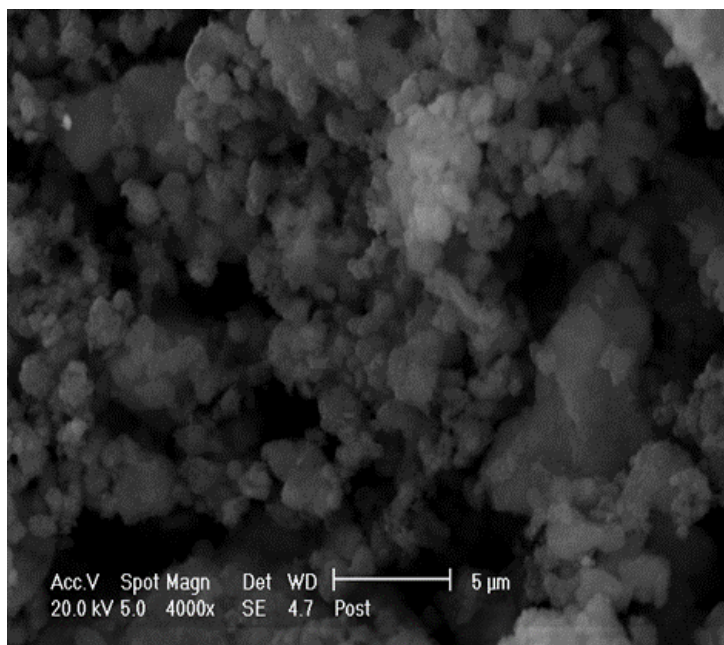


Fig. S1 SEM image of the silicon-vanadium nitride composite produced at 600 °C.

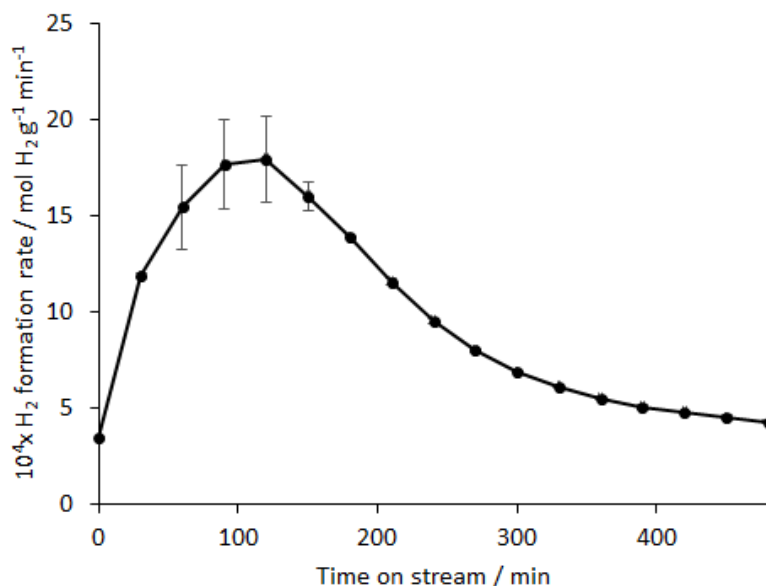


Fig. S2 Variation in mass normalised H₂ formation rate of silicon nitride produced at 600 °C, measured using a 0.2 g sample with 75% CH₄ / 25% N₂ at 12 ml min⁻¹ at 800 °C, initial ramp rate 50 °C min⁻¹. Similar values were obtained in a repeat run with the same mass of catalyst.

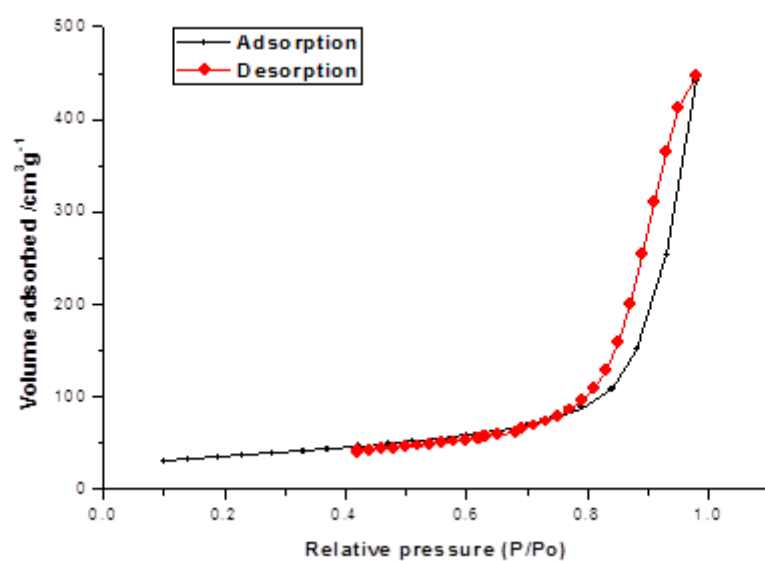


Fig. S3 Nitrogen adsorption desorption isotherm of the silicon-vanadium nitride composite produced at 600 °C pre-reaction.

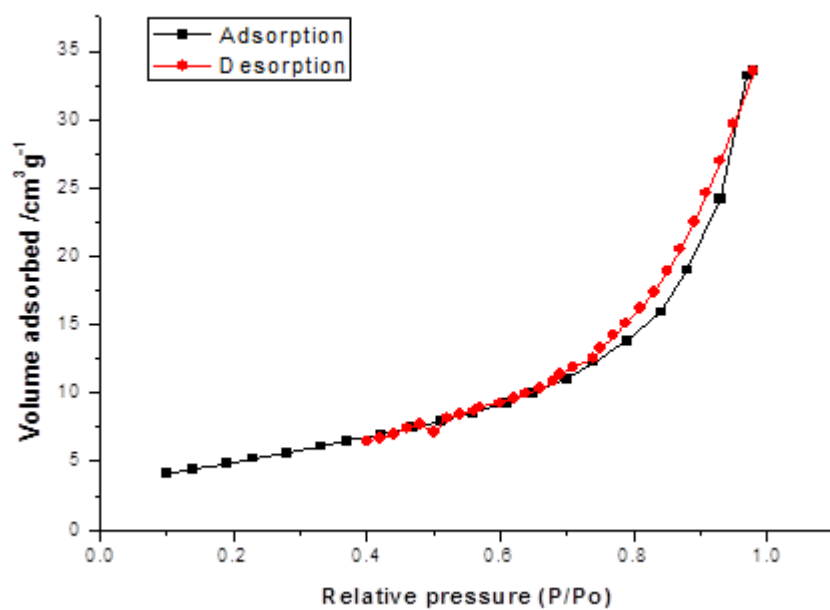


Fig. S4 Nitrogen adsorption desorption isotherm of the silicon-vanadium nitride post-reaction.

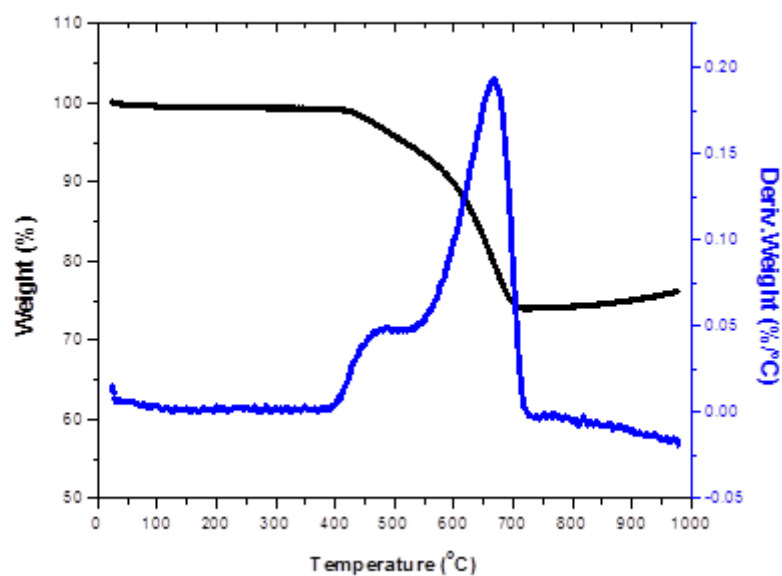


Fig. S5 TGA (air, 50 ml/ min, 10 °C min⁻¹) of the silicon-vanadium nitride composite produced at 600 °C post-catalysis.

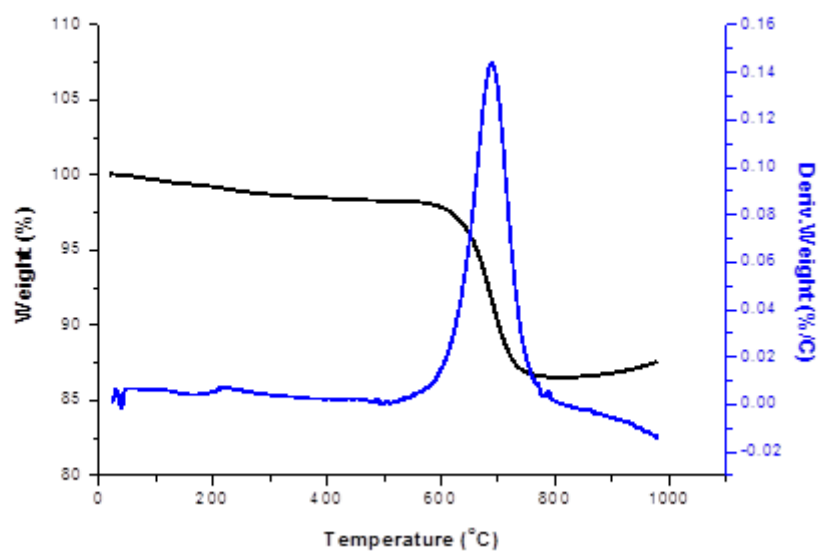


Fig. S6 TGA (air, 50 ml/ min, 10 °C min⁻¹) of the silicon nitride produced at 600 °C post-catalysis.