Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information for

Thermodynamically neutral Kubas-type hydrogen storage using amorphous Cr(III) alkyl hydride gels

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Total number of pages: 12

Table of Contents

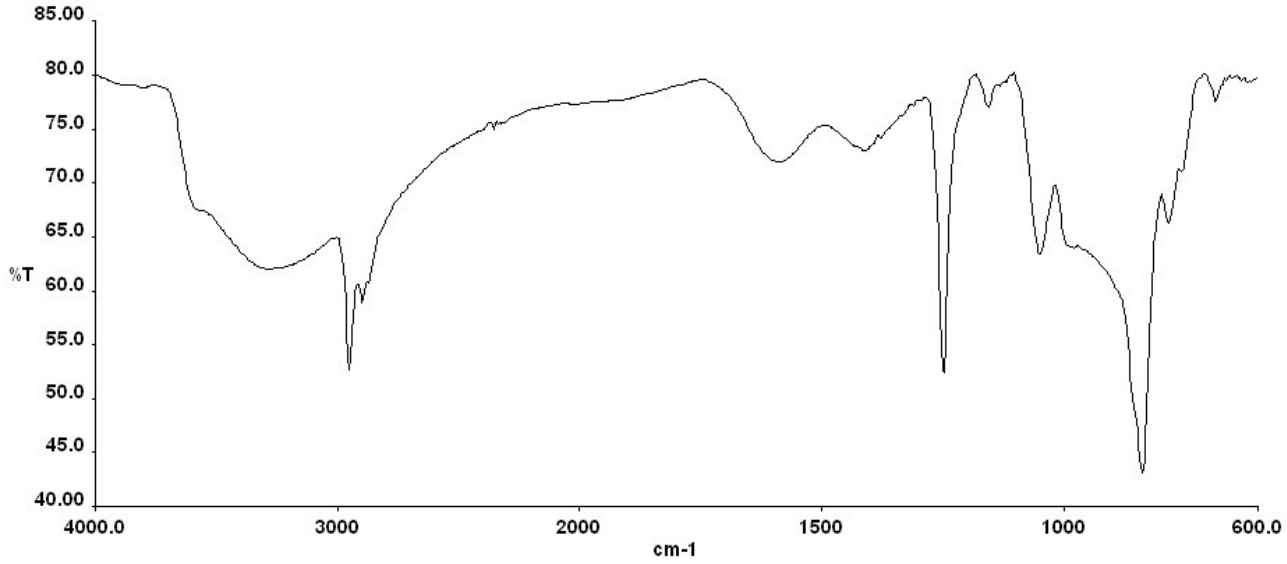

Figure S1. Infrared spectrum of Cr-100

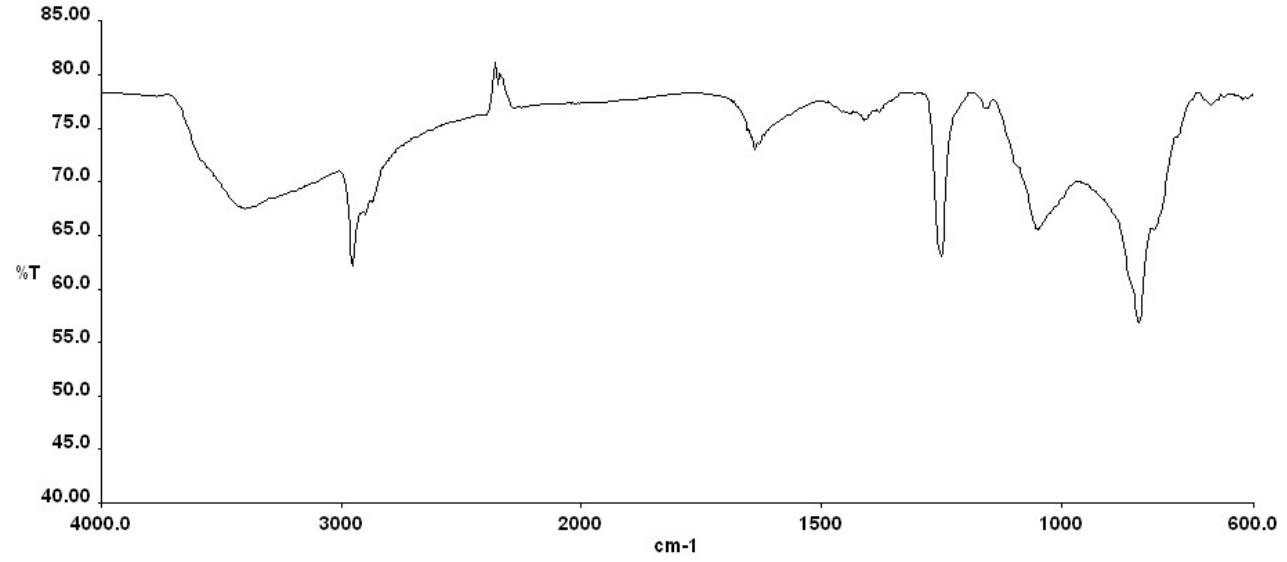

Figure S2. Infrared spectrum of Cr-150C-H_2

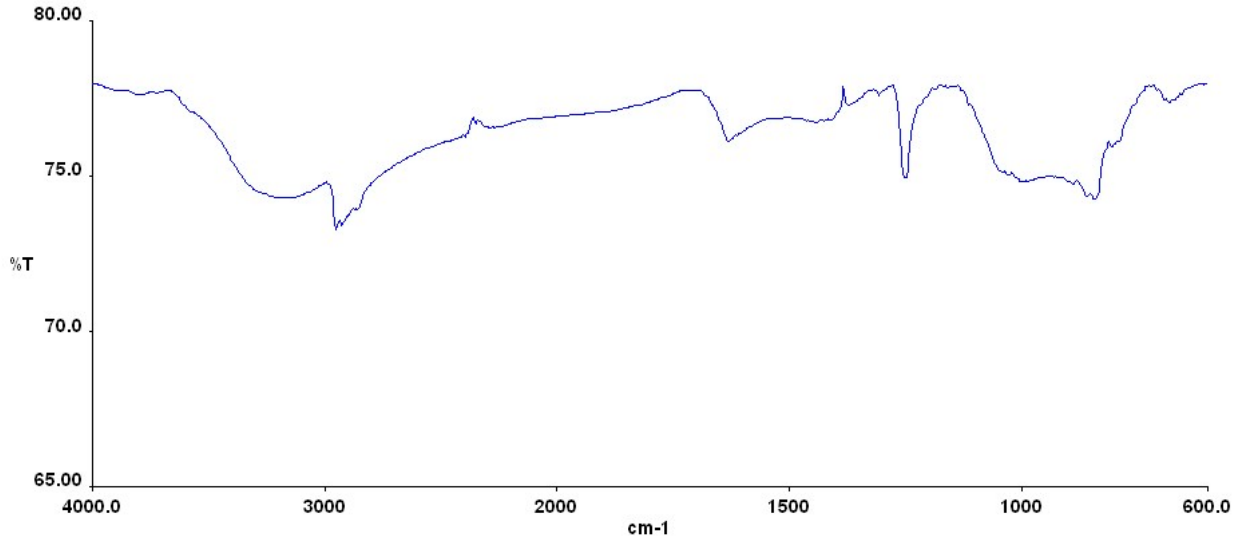

Figure S3. Infrared spectrum of Cr-25C-H_2

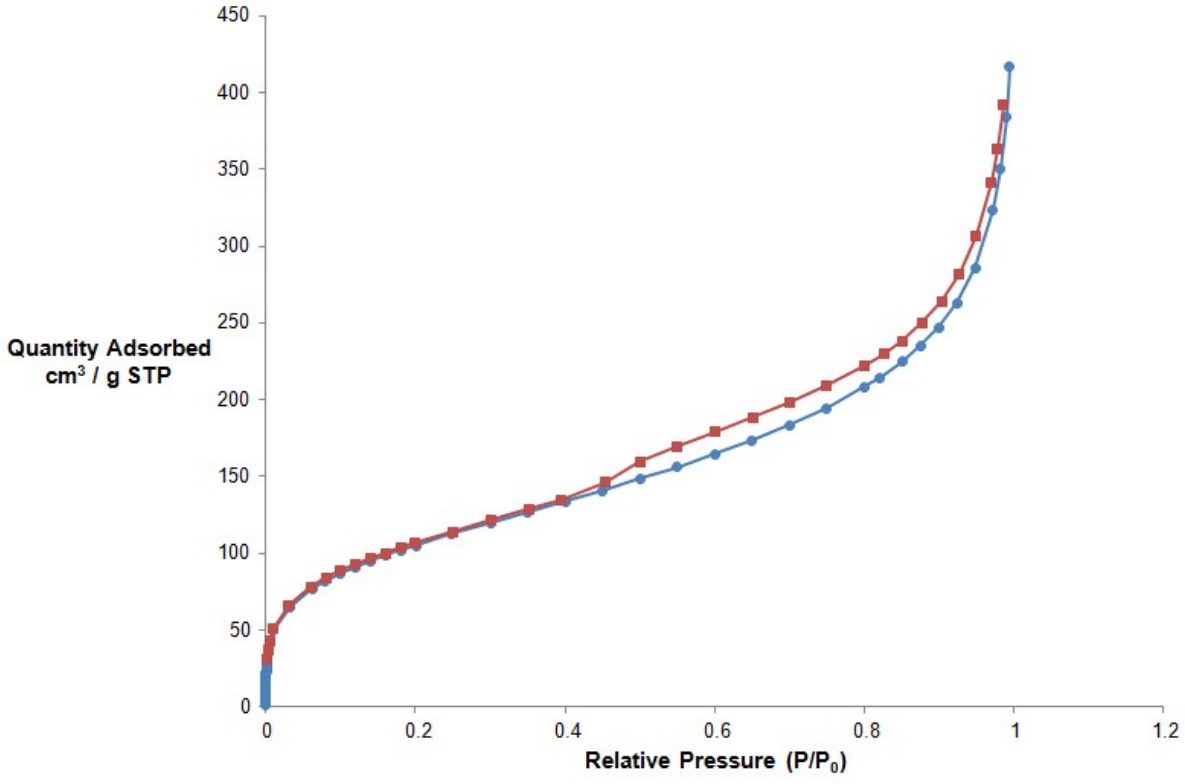

Figure S4. Nitrogen adsorption (red)-desorption (blue) isotherms of Cr-100

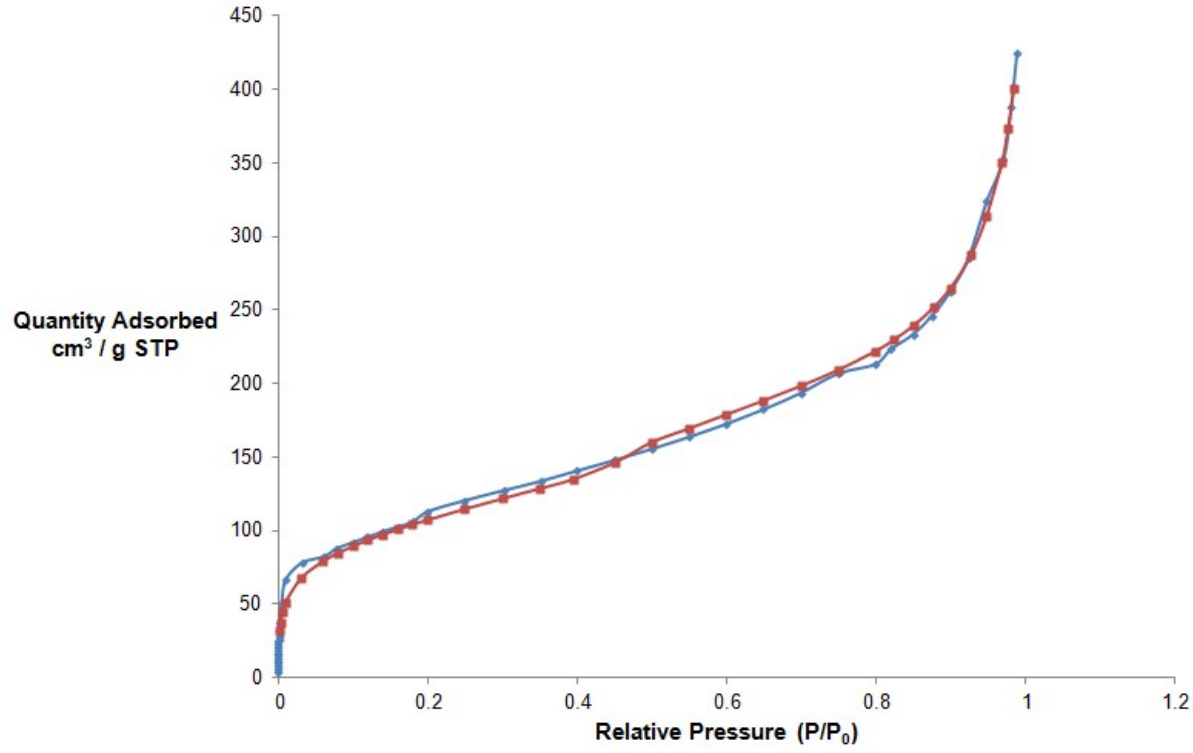

Figure S5. Nitrogen adsorption (red)-desorption (blue) isotherms of Cr-25C-H_2

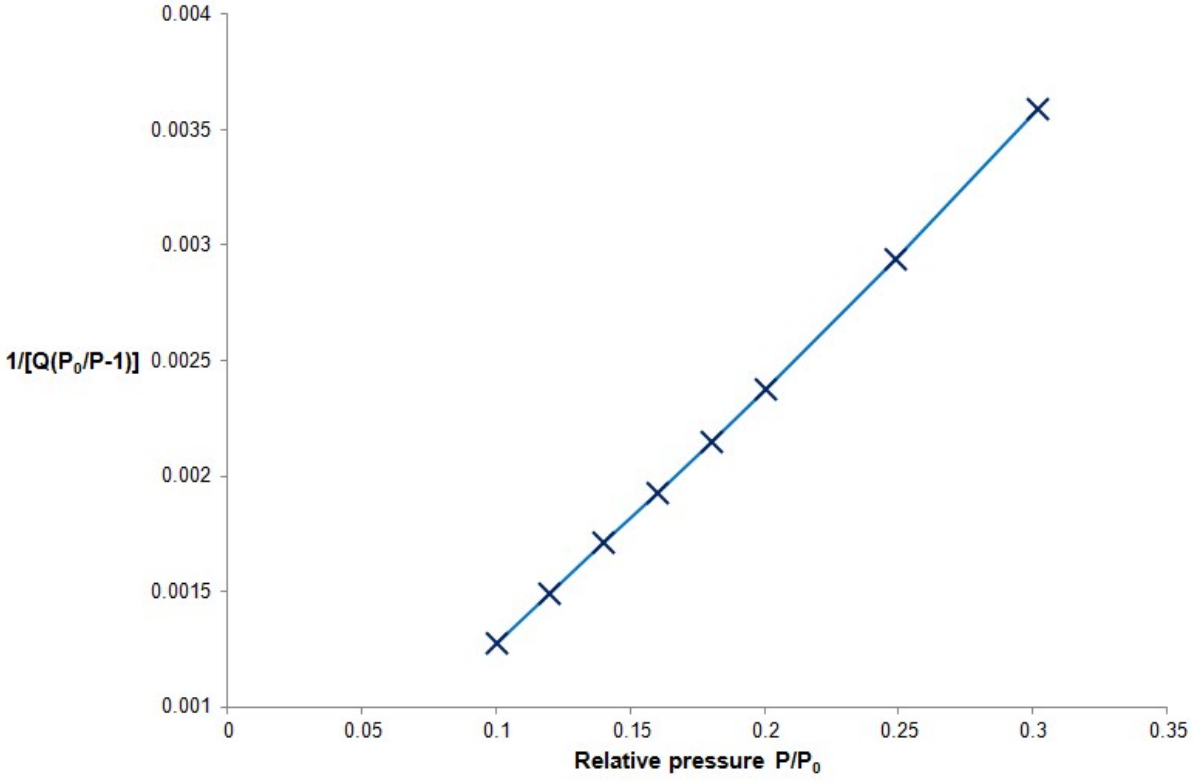

Figure S6. BET transform plot of Cr-100

-H

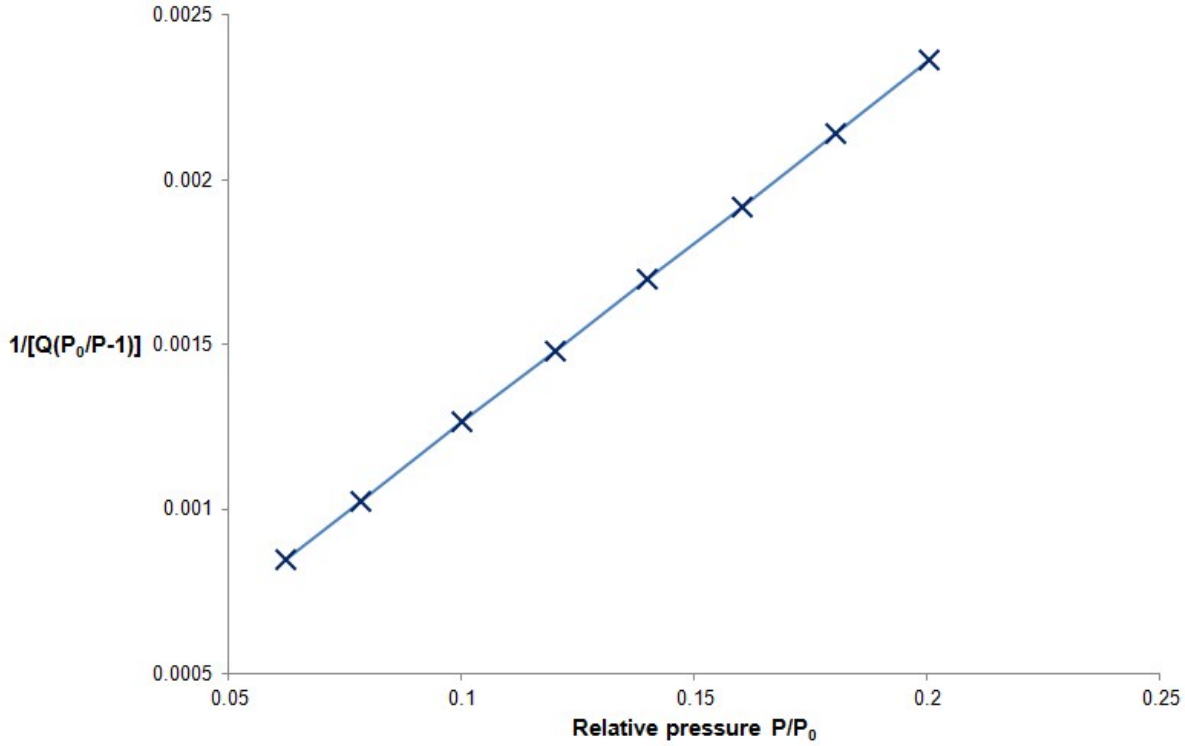

Figure S7. BET transform plot of Cr-25C-H_2

Sample	BET surface area (m^3/g)	Pore volume (cm^3/g)	Average BJH desorption pore size (Å)
Cr-100	377	0.218	36.74
Cr-25C-H_2	391	0.215	36.79

Table T1. Nitrogen adsorption-desoprtion data

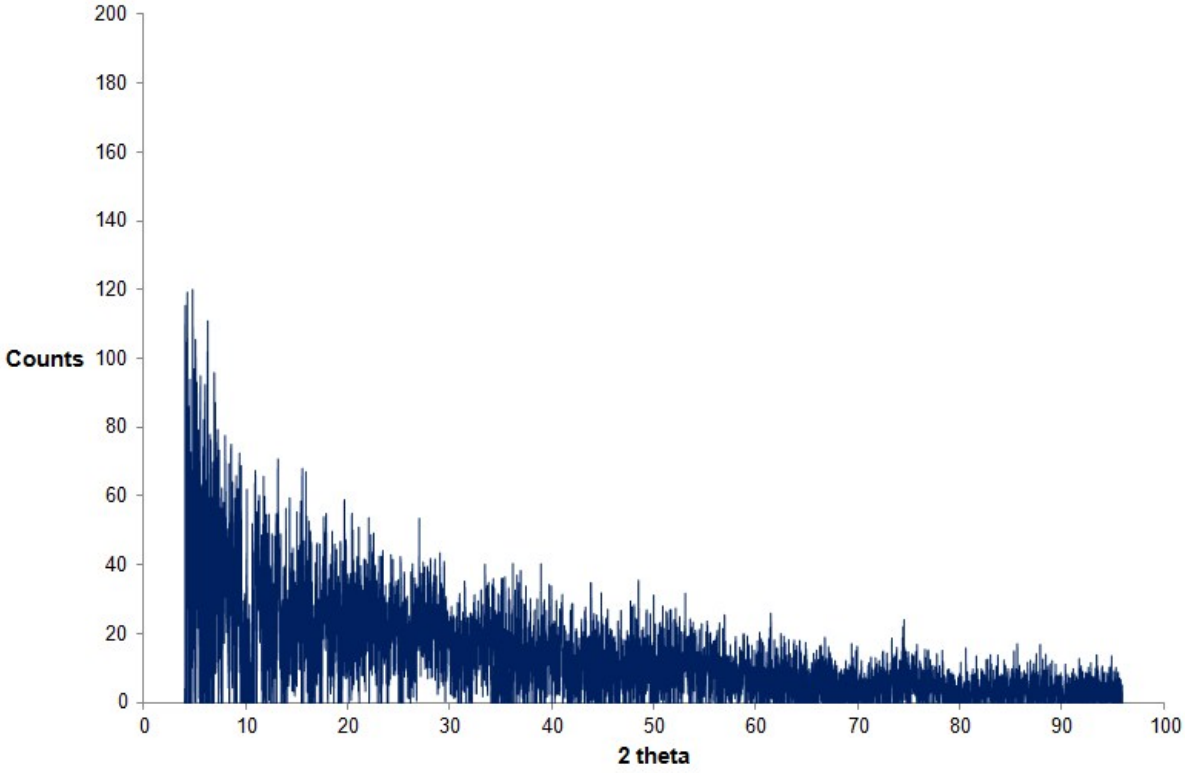

Figure S8. PXRD of Cr-100

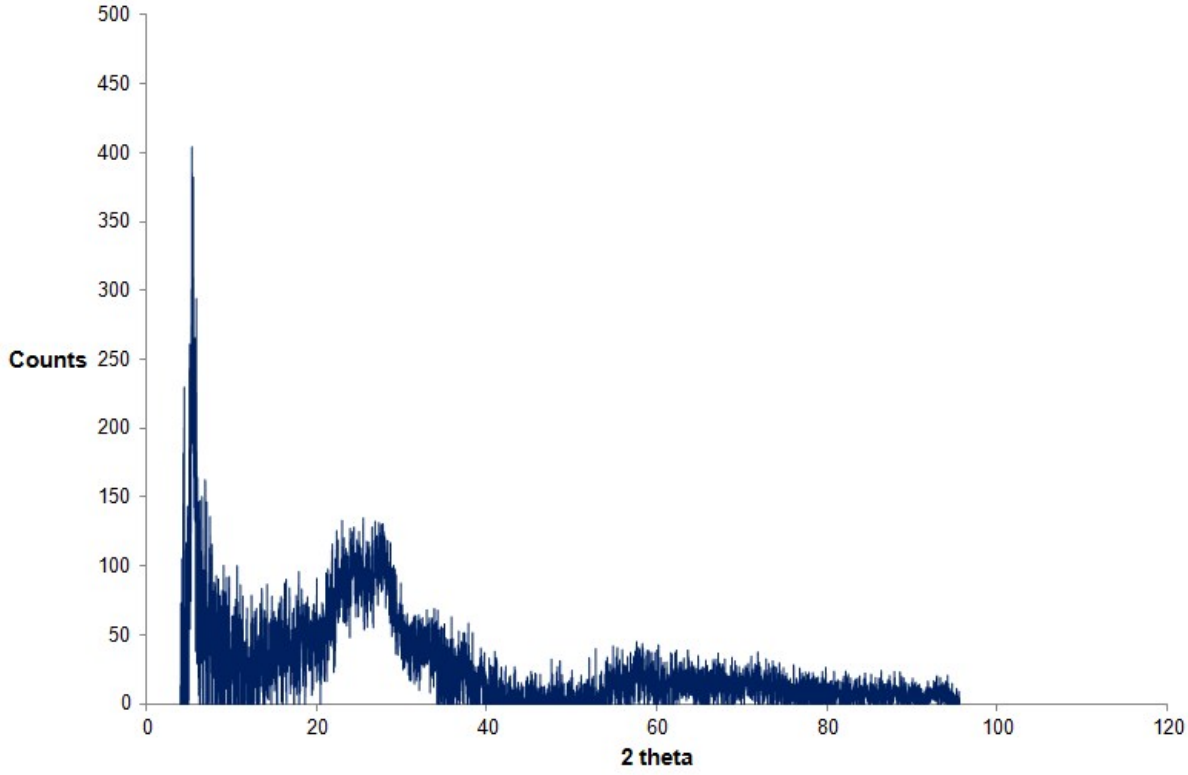

Figure S9. PXRD of Cr-150C-H_2

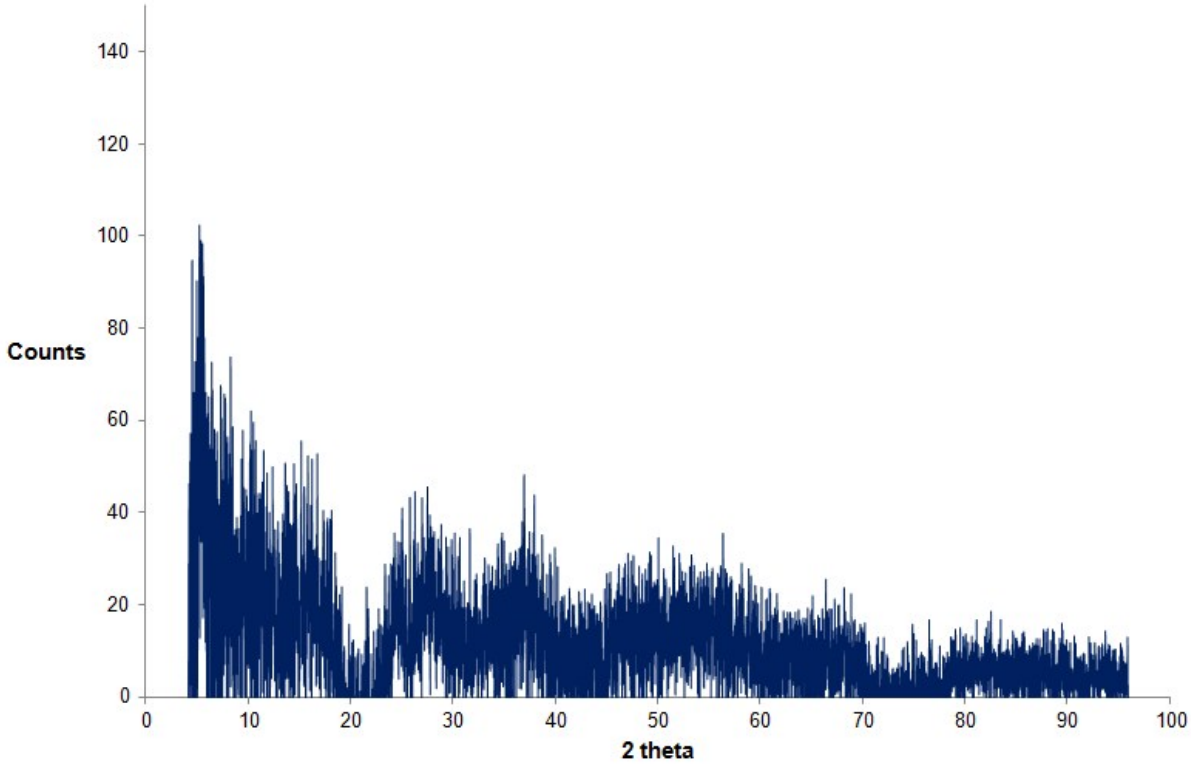

Figure S10. PXRD of Cr-25C-H_2

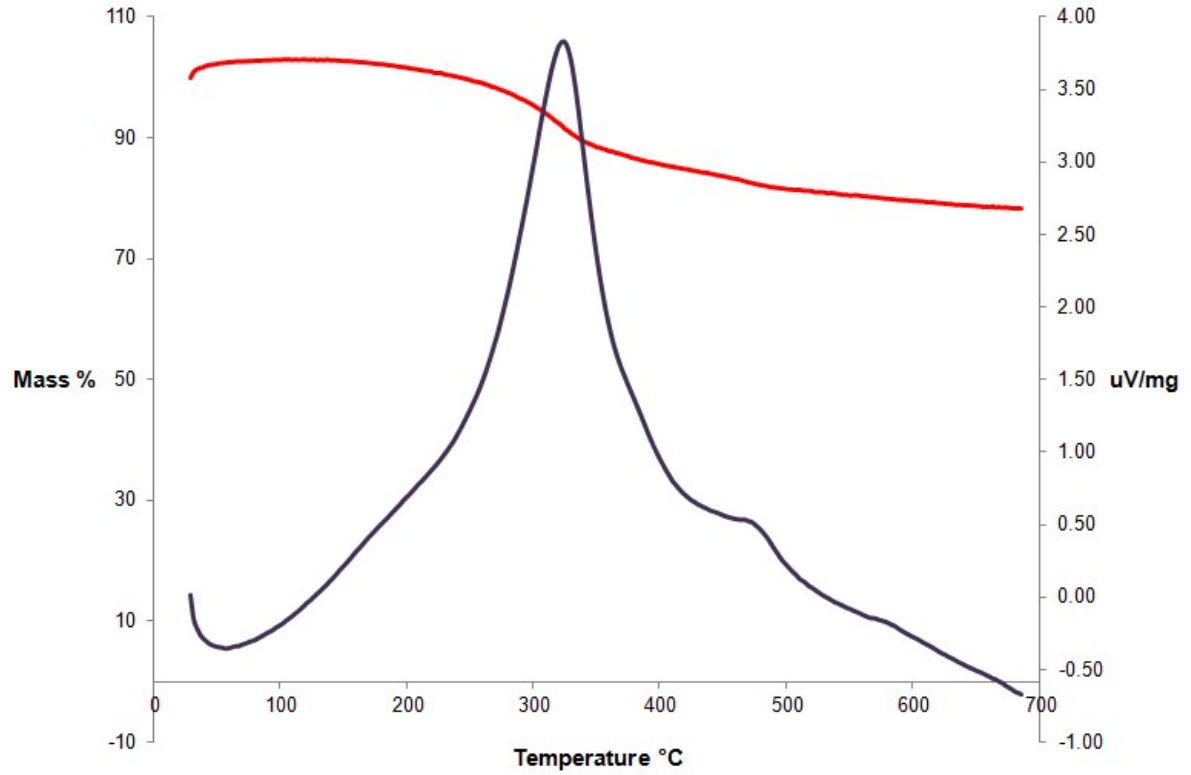

Figure S11. TGA (red) and DTA (purple) curves of Cr-100

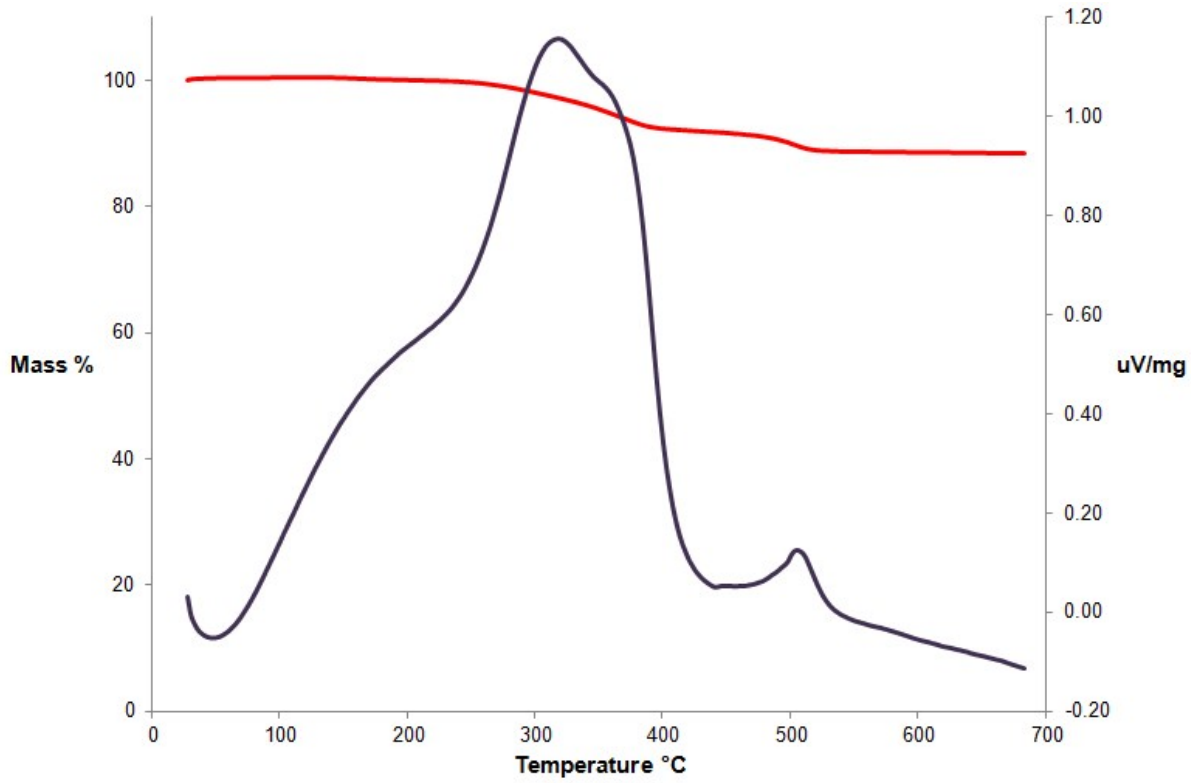

Figure S12. TGA (red) and DTA (purple) curves of Cr-150C-H_2

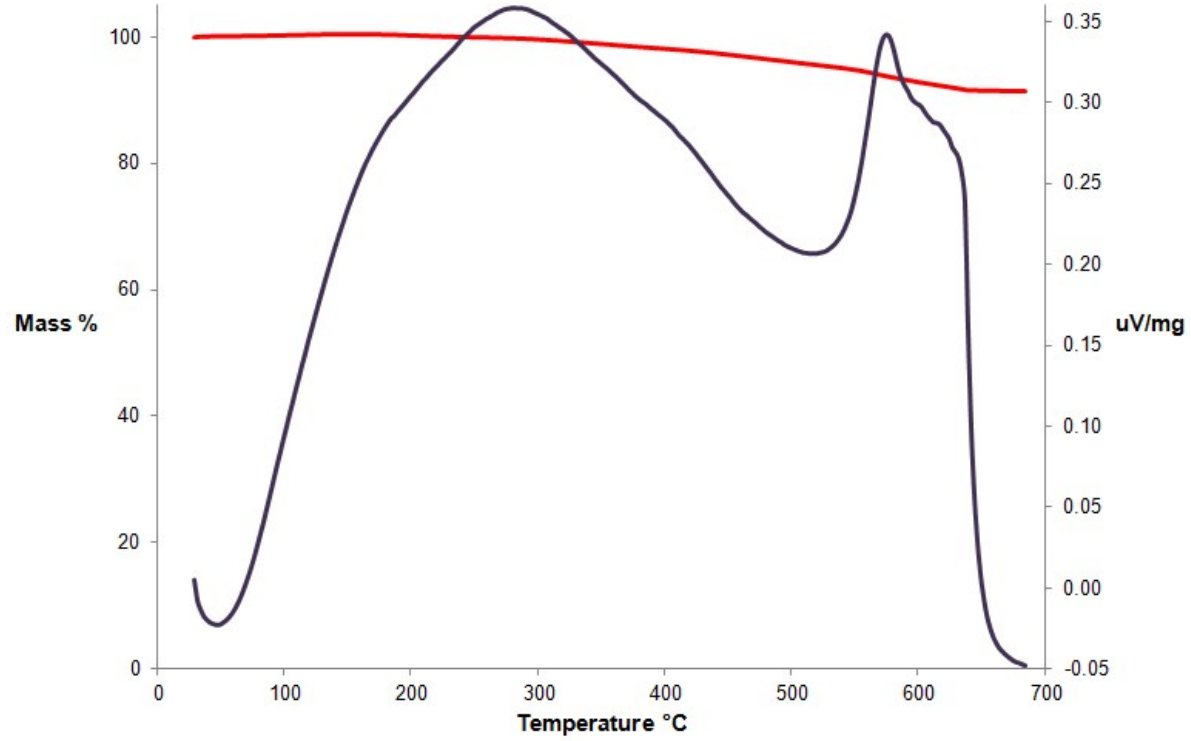

Figure S13. TGA (red) and DTA (purple) curves of Cr-25C-H_2

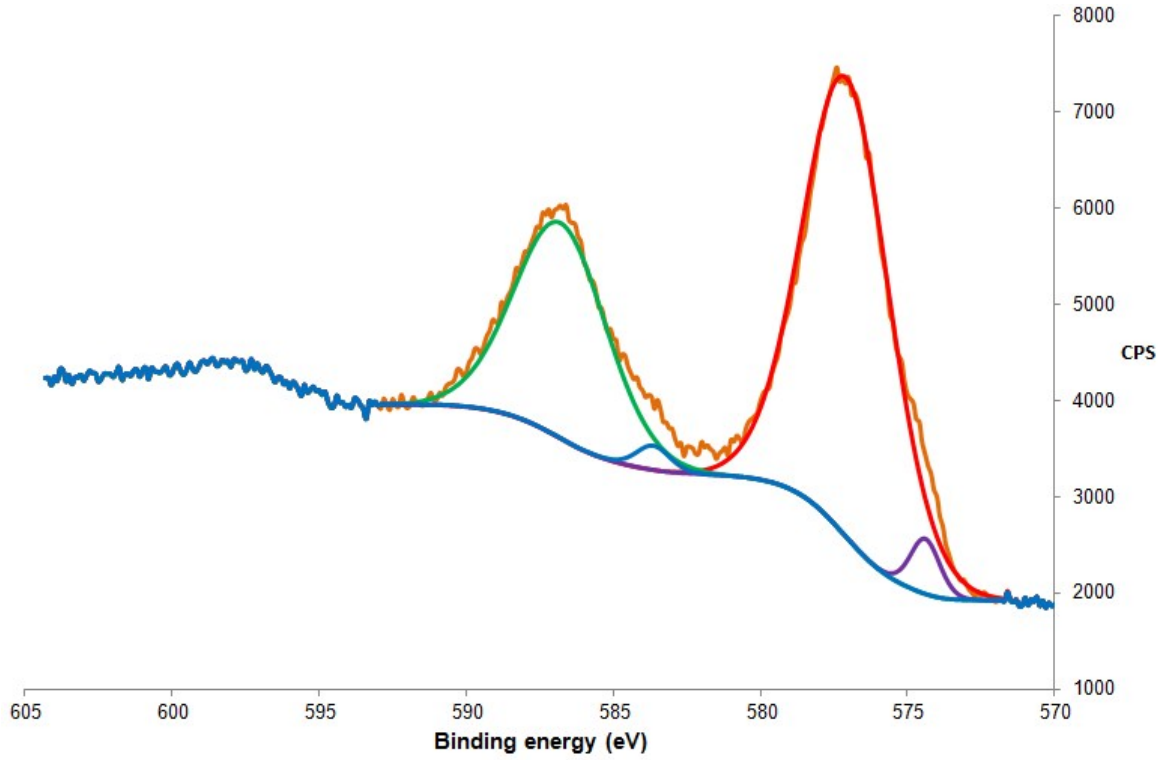

Figure S14. Peak fitting of chromium $2p_{1/2}$ and $2p_{3/2}$ region of XPS of Cr-100

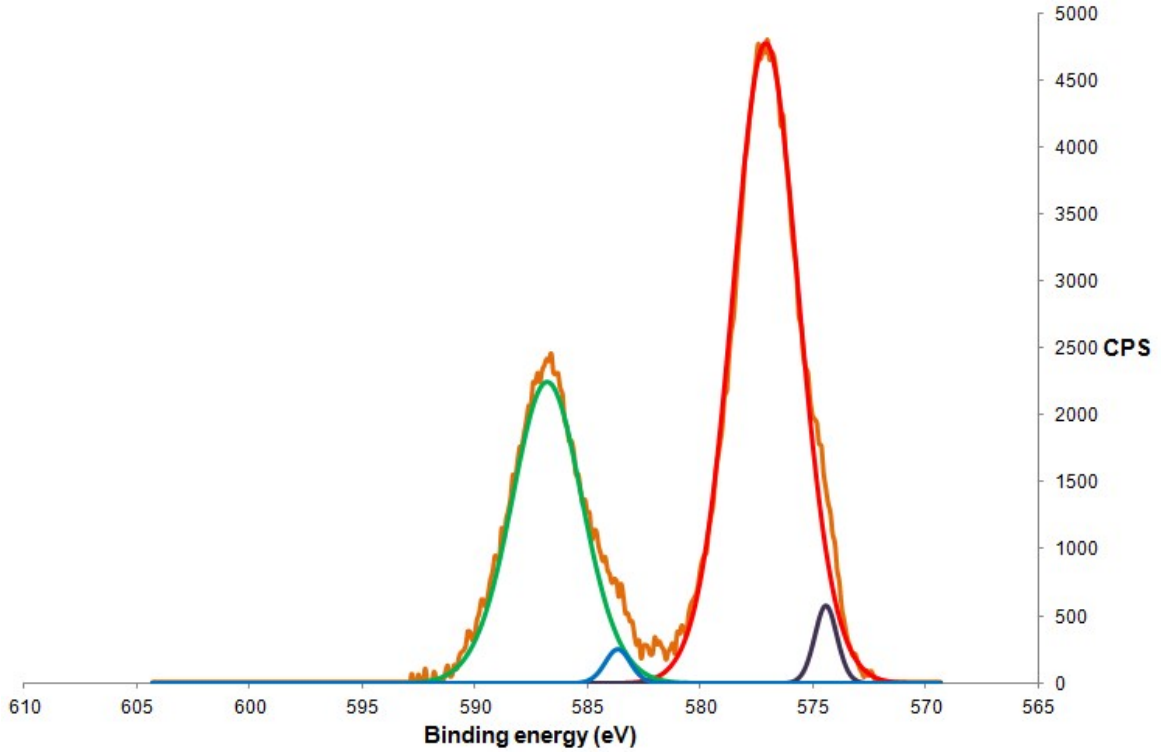

Figure S15. Baseline corrected peak fitting of chromium $2p_{1/2}$ and $2p_{3/2}$ region of XPS of Cr-100

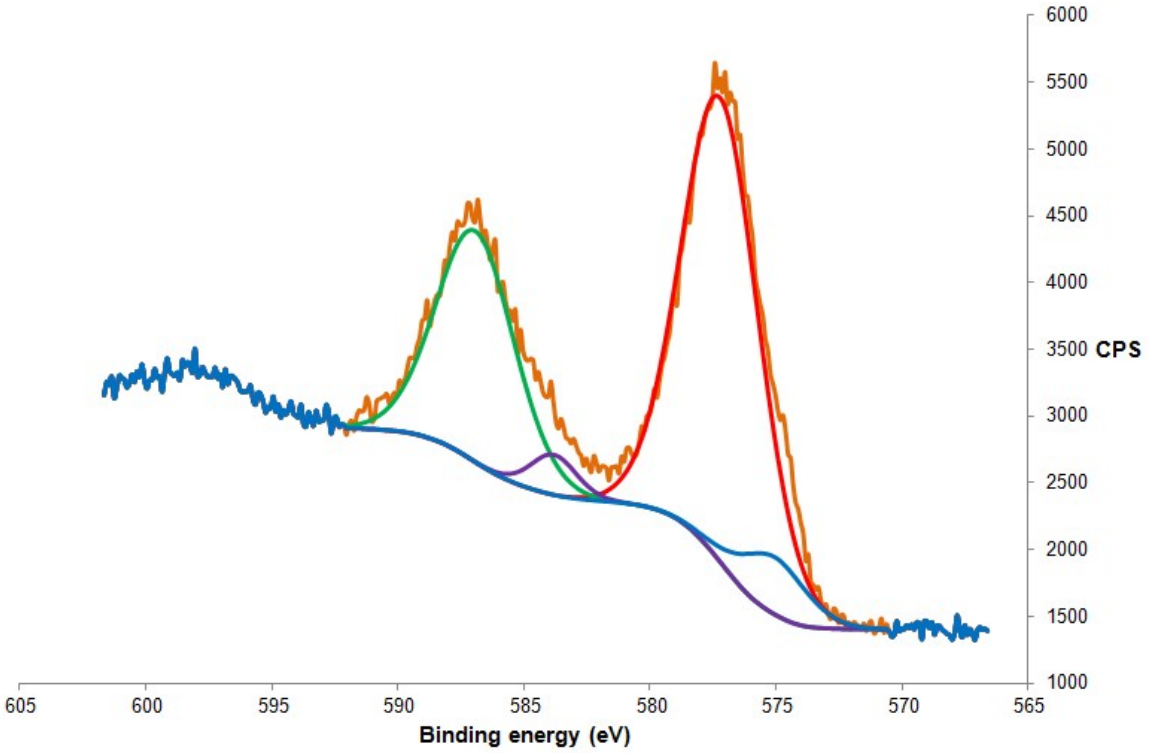

Figure S16. Peak fitting of chromium $2p_{1/2}$ and $2p_{3/2}$ region of XPS of Cr-150C-H_2

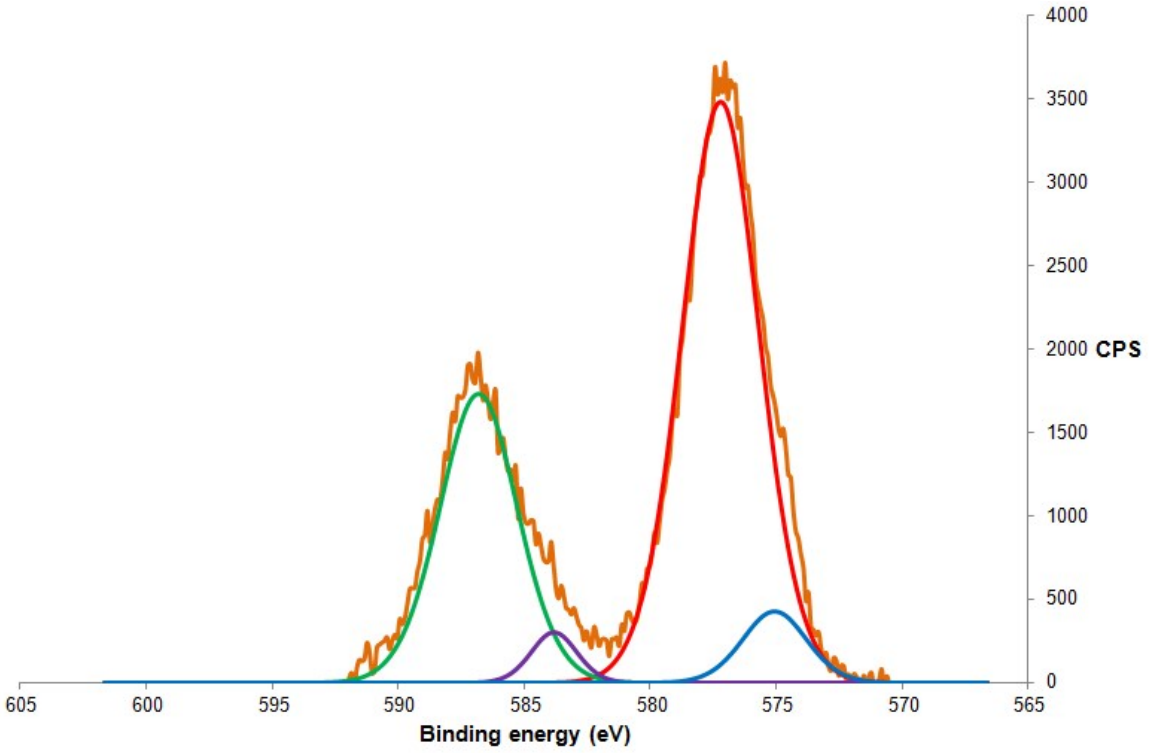

Figure S17. Peak fitting of chromium $2p_{1/2}$ and $2p_{3/2}$ region of XPS of Cr-150C-H_2

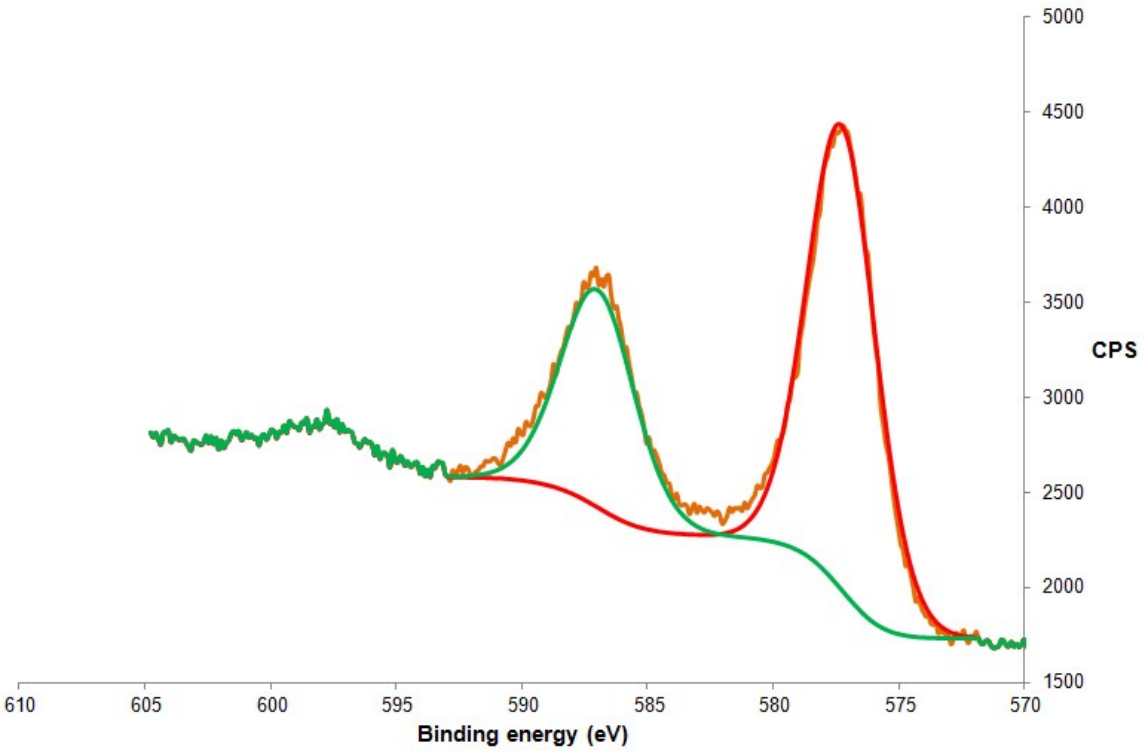

Figure S18. Peak fitting of chromium $2p_{1/2}$ and $2p_{3/2}$ region of XPS of Cr-25C-H_2

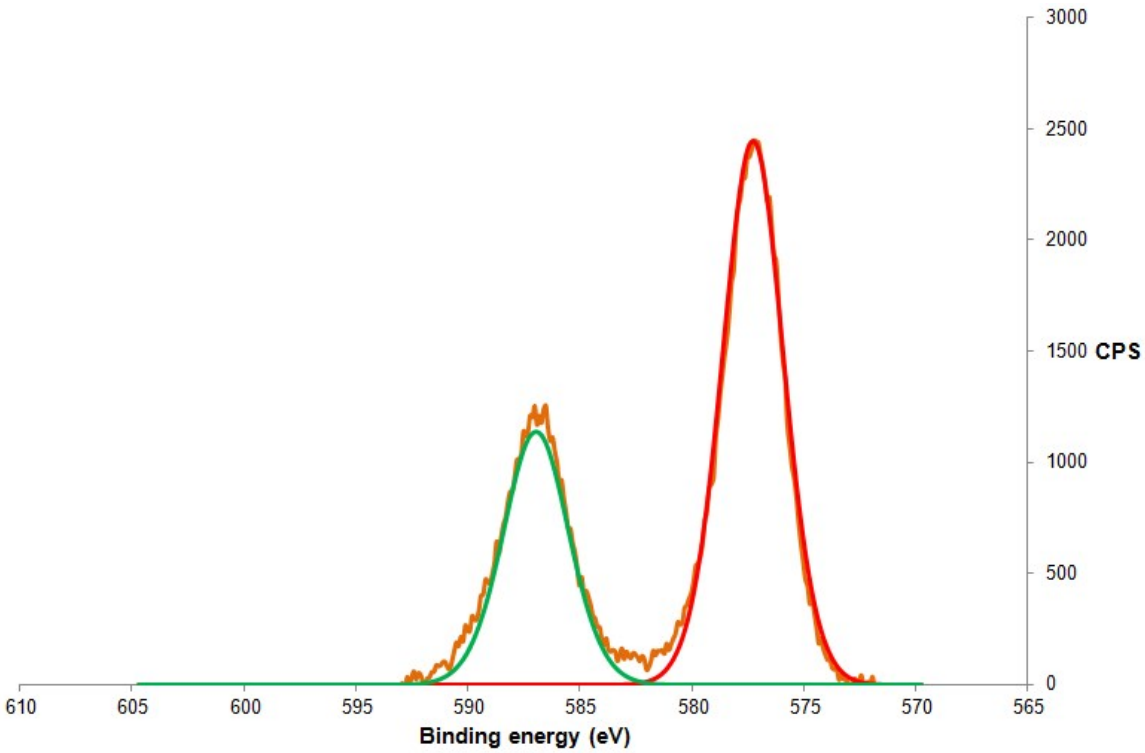

Figure S19. Baseline corrected peak fitting of chromium $2p_{1/2}$ and $2p_{3/2}$ region of XPS of Cr-25C-H_2