

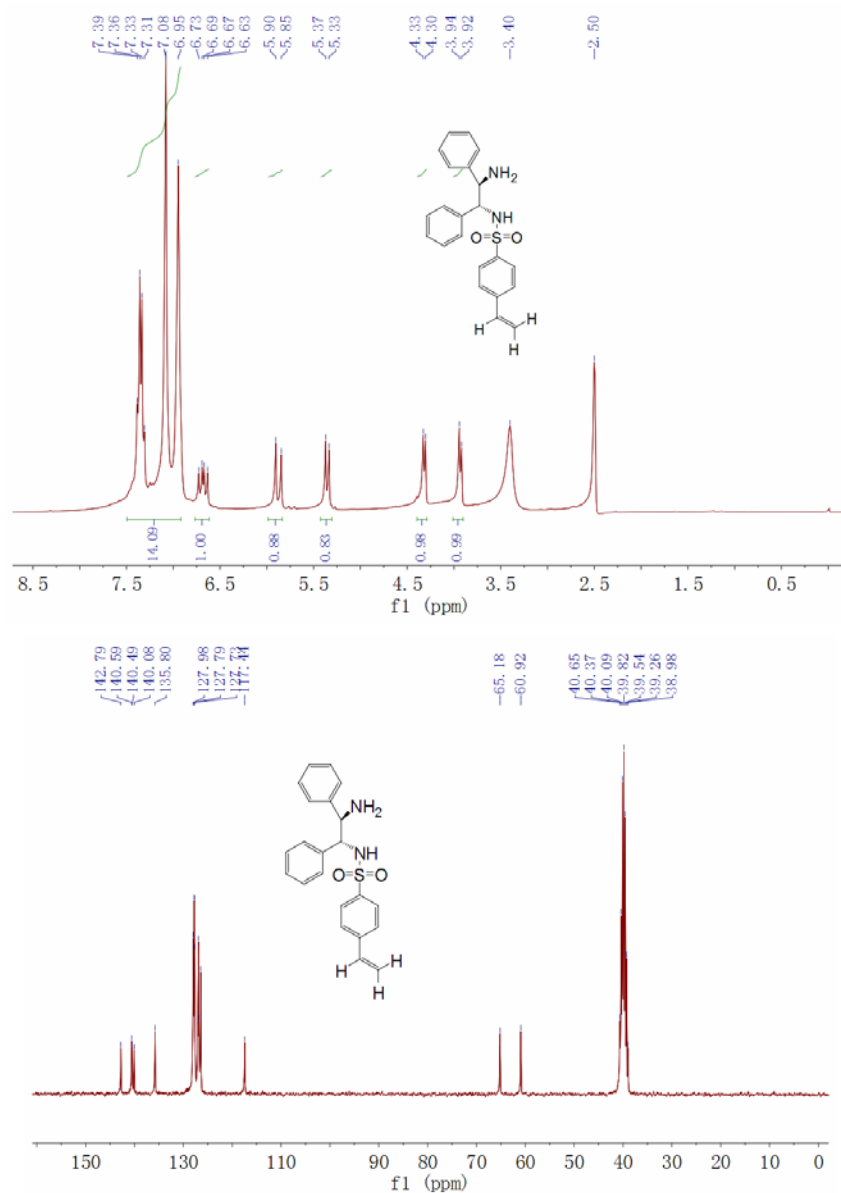
Electronic supplementary information for *Dalton Trans.*

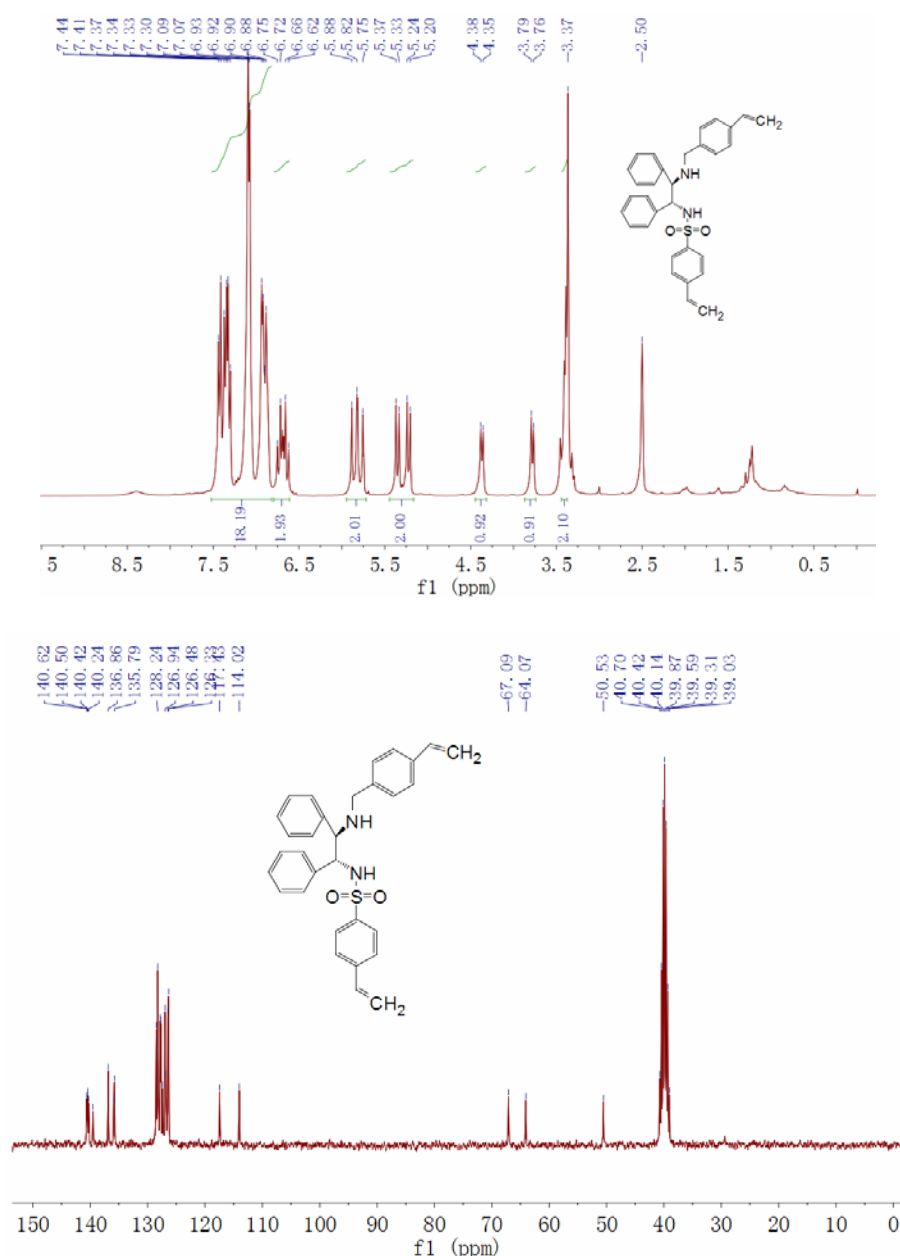
# Anchored $[\text{RuCl}_2(p\text{-cymene})]_2$ in hybrid zirconium phosphate-phosphonate coated and pillared with double-stranded hydrophobic linear polystyrene as heterogeneous catalyst suitable for aqueous asymmetric transfer hydrogenation

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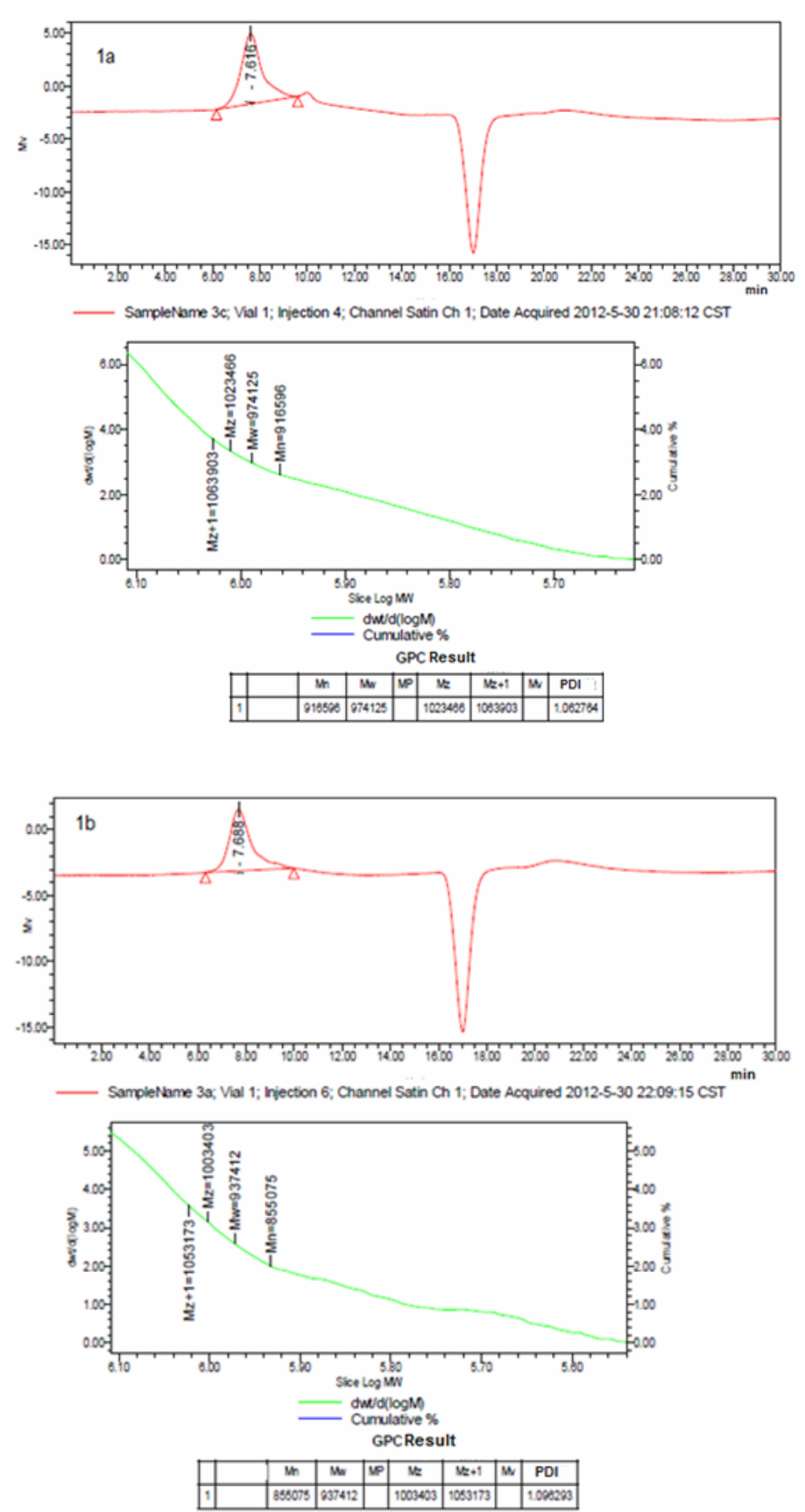
## 1. NMR spectra

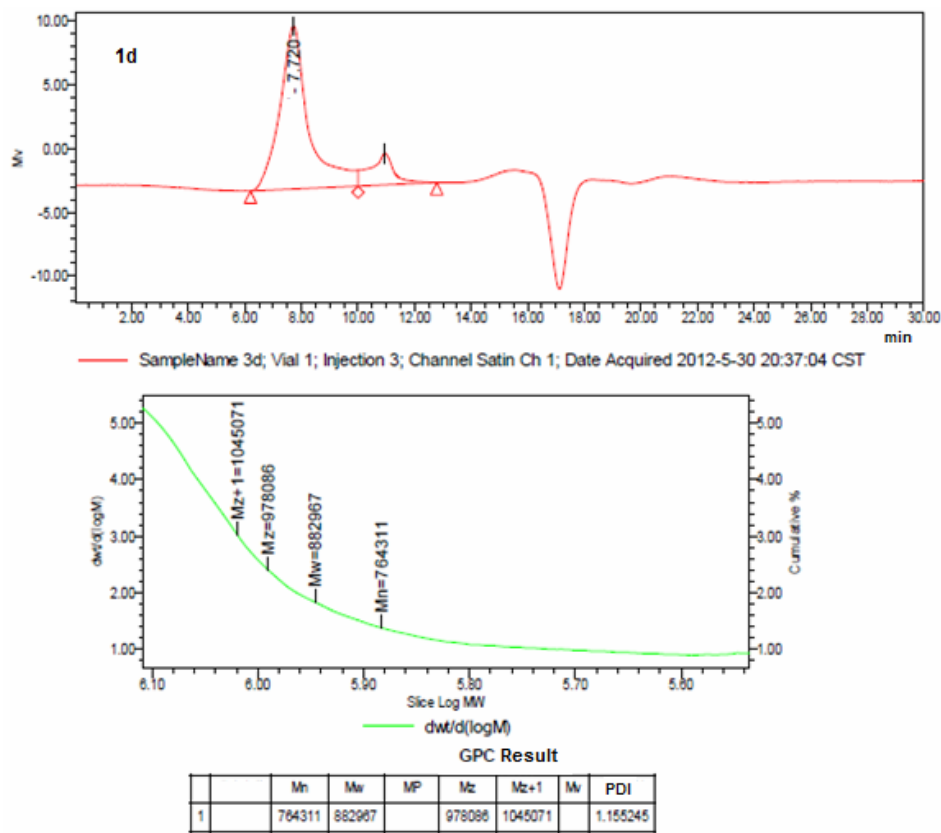
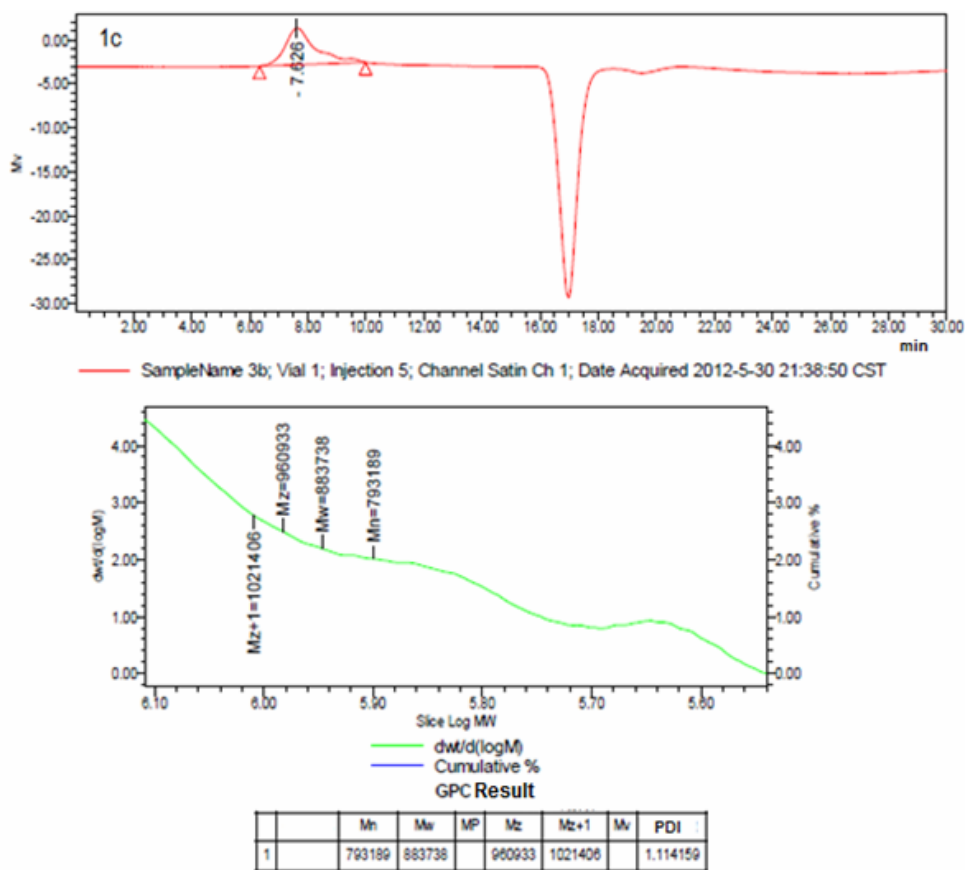


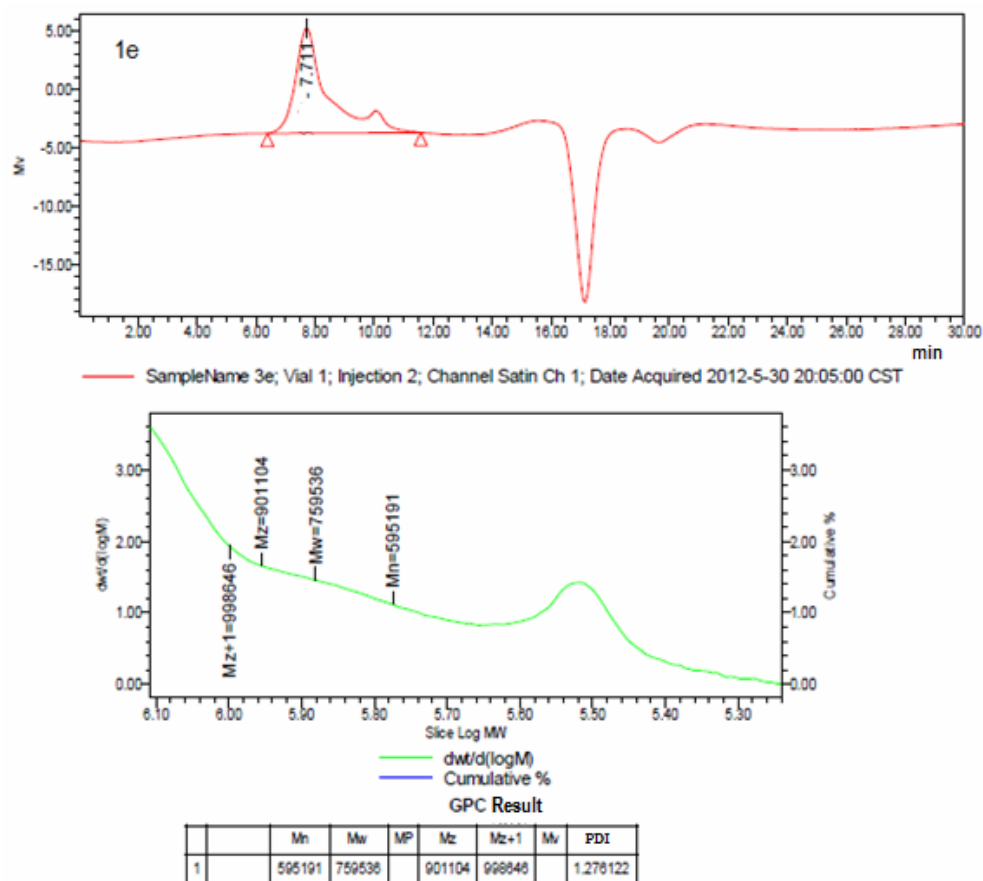


$\delta_{\text{H}}$  (300.1 MHz, DMSO-d<sub>6</sub>, TMS) 7.44 – 6.88 (m, 18 H, Ph-H), 6.75-6.62 (m, 2 H, -CH=), 5.82 (dd,  $^3J=19.8, 3.0$  Hz, 2 H, =CH<sub>2</sub>), 5.29 (dd,  $^3J=38.9, 10.9$  Hz, 2H, vinyl), 4.37 (d,  $^3J=8.4$  Hz, 1 H, CHN), 3.78 (d,  $^3J=8.4$  Hz, 1 H, CHN), 3.37 (s, 2 H, CH<sub>2</sub>).  $\delta_{\text{C}}$  (75.0 MHz, DMSO-d<sub>6</sub>, TMS) 140.6, 140.5, 140.4, 140.2, 139.5, 136.7, 135.9, 135.8, 128.5, 128.2, 127.8, 127.7, 127.4, 126.9, 126.7, 126.5, 126.3 (Ph), 117.4, 114.0 (CH=CH<sub>2</sub>), 67.1, 64.1 (CHN), 50.5 (CH<sub>2</sub>). Anal. Calcd for C<sub>31</sub>H<sub>30</sub>N<sub>2</sub>O<sub>2</sub>S: C, 75.27; H, 6.11; N, 5.66; O, 6.47; S, 6.48. Found: C, 75.30; H, 6.14; N, 5.59.

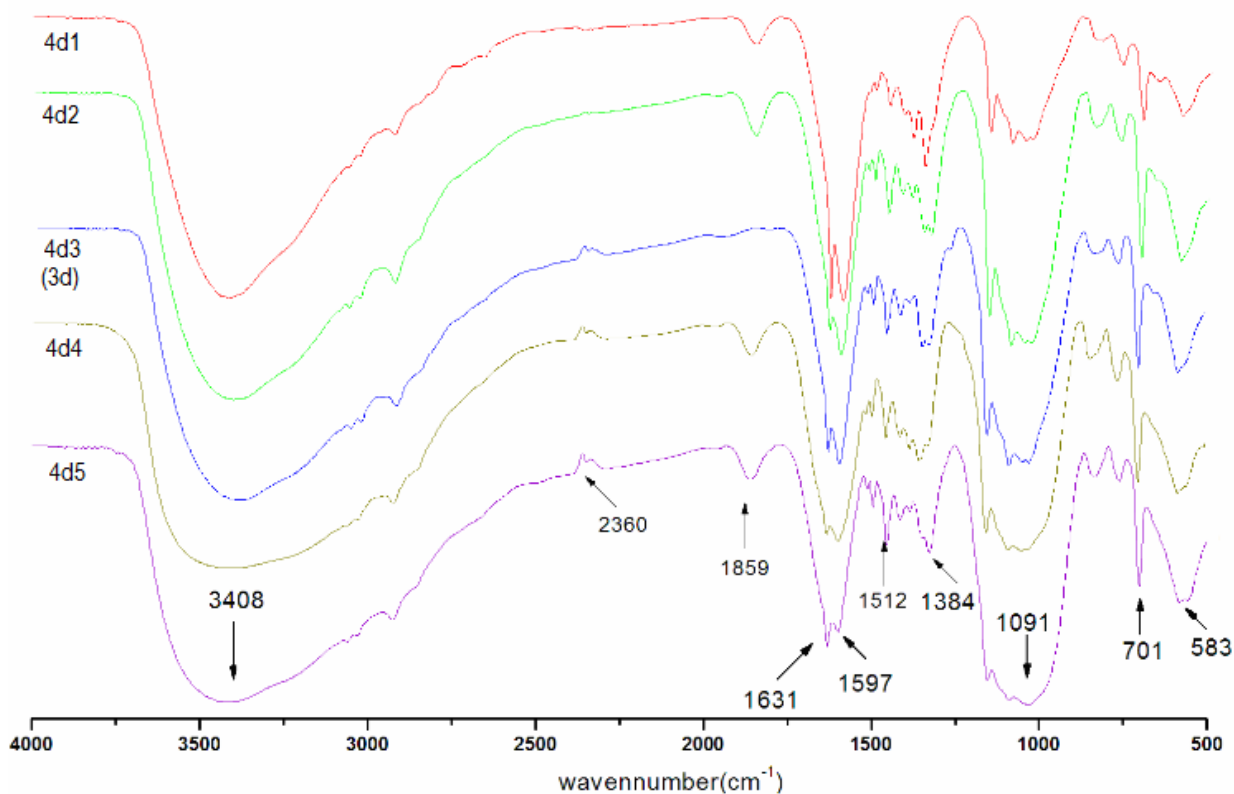
2. GPC spectra



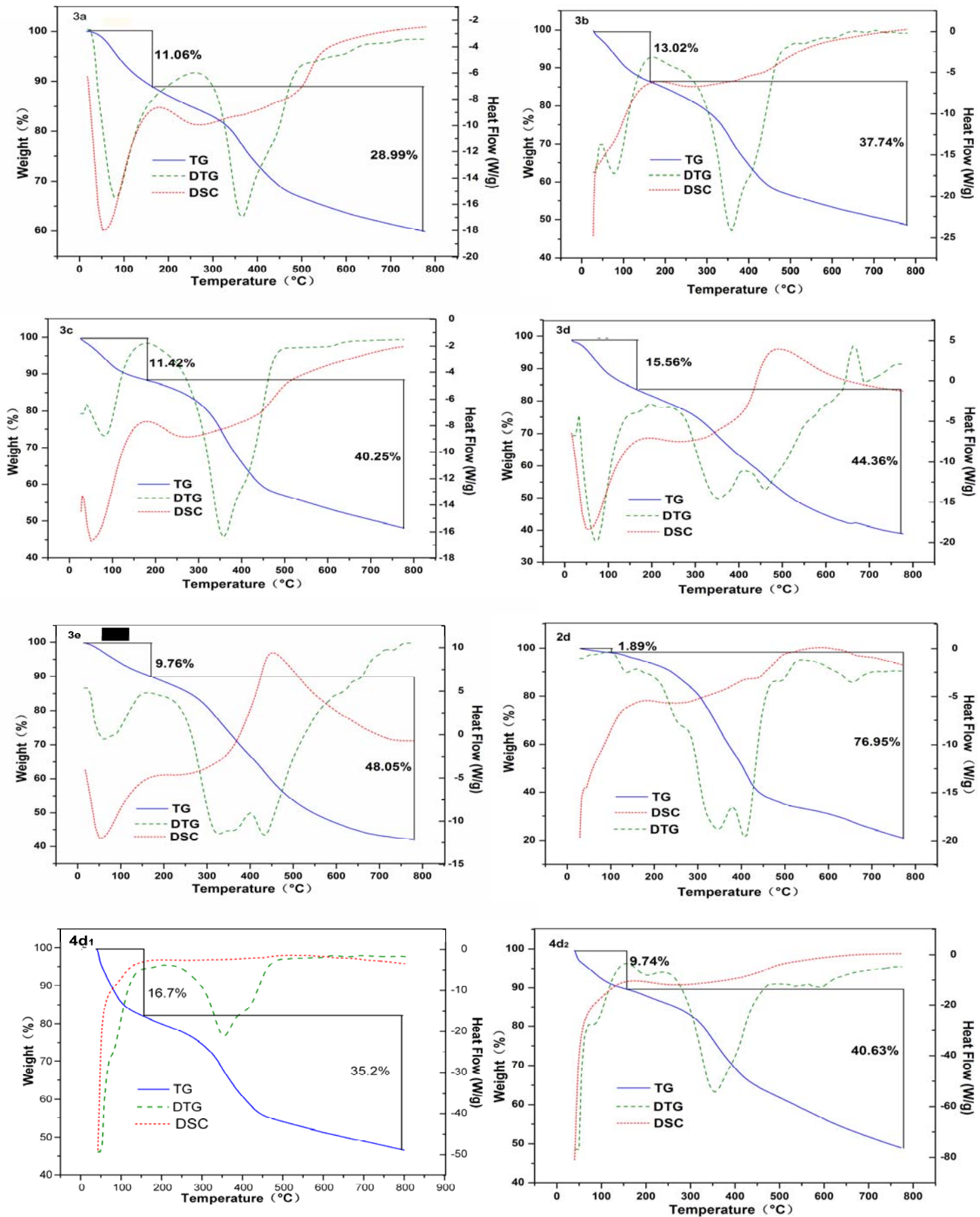


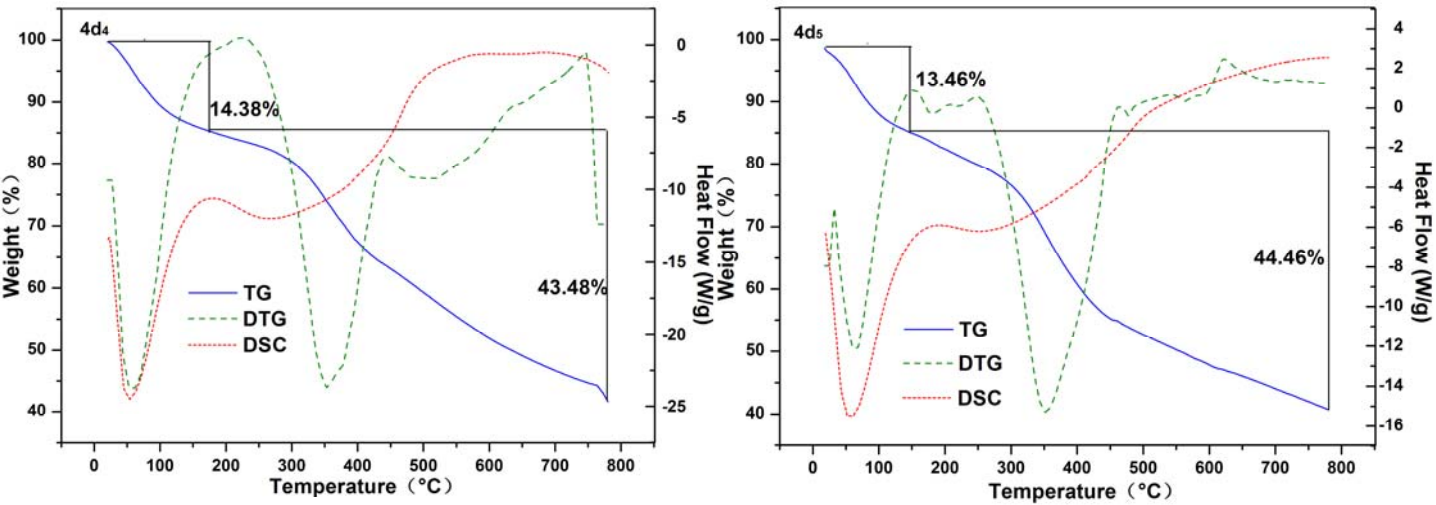


3. IR spectra

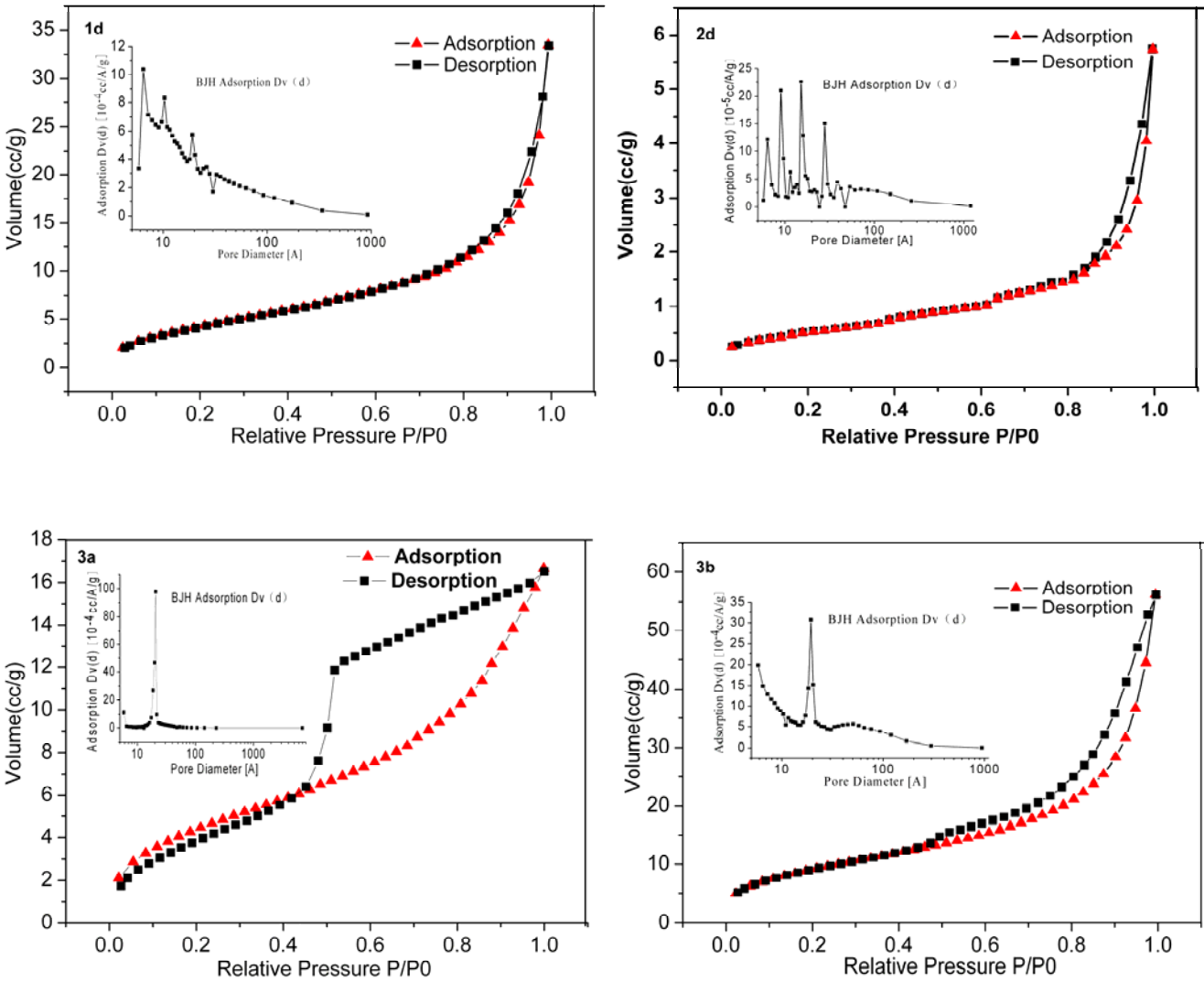


4. TGA

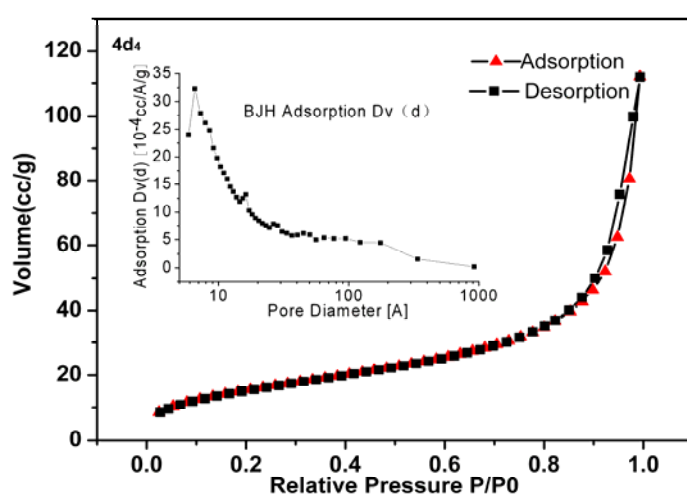
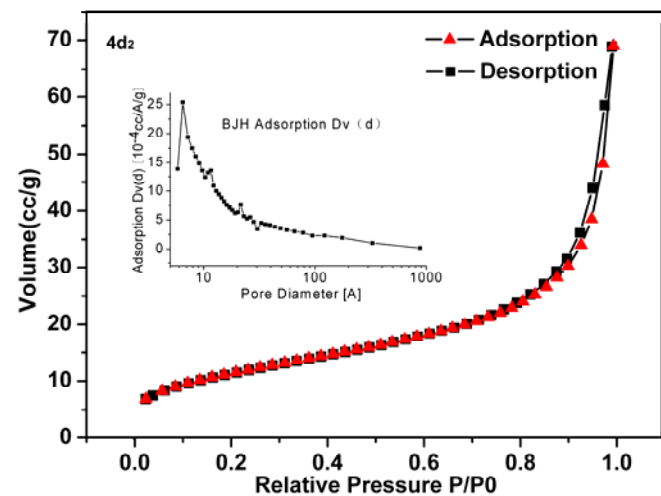
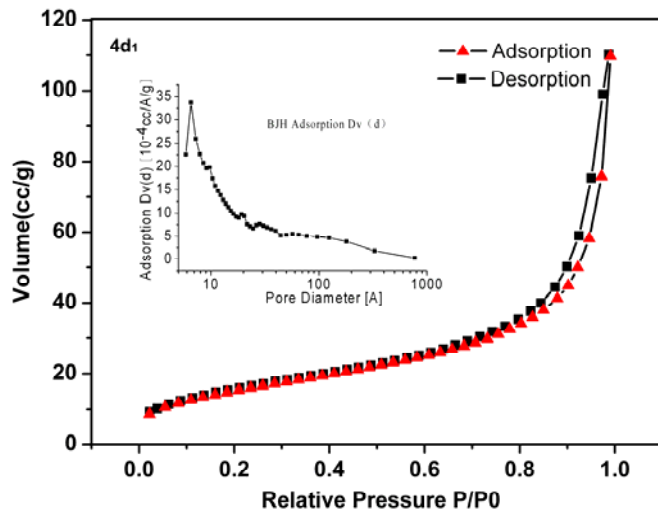
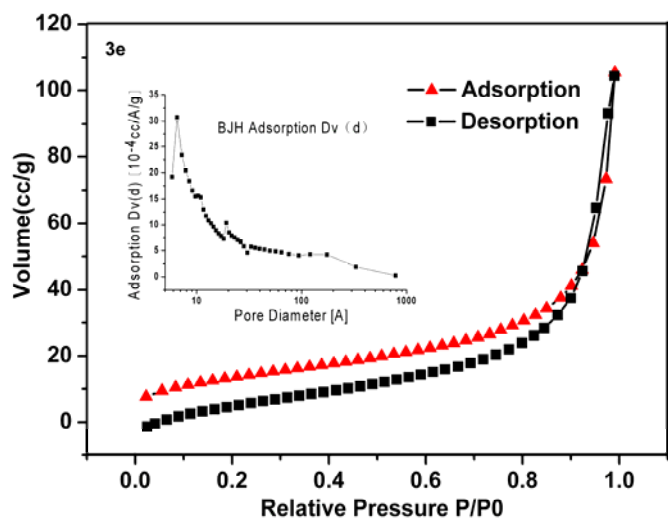
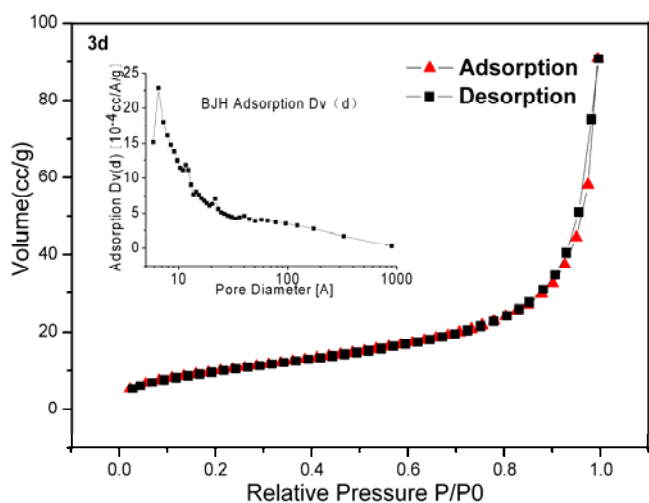
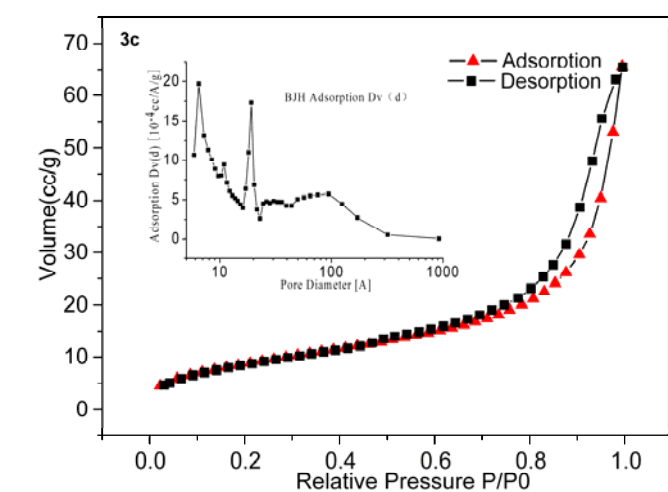




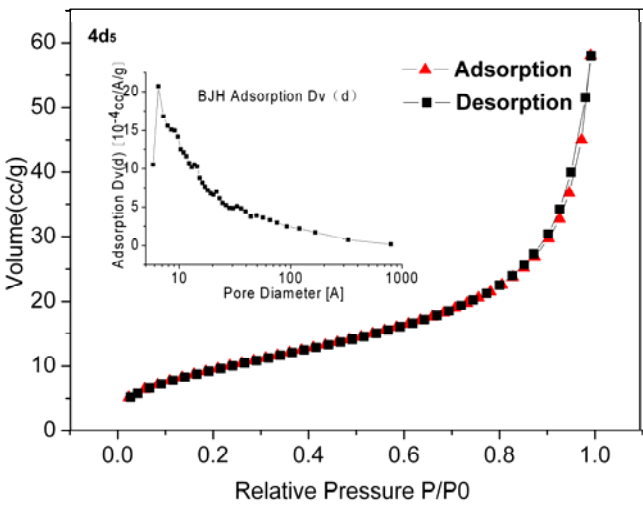
5. The nitrogen adsorption–desorption isotherms



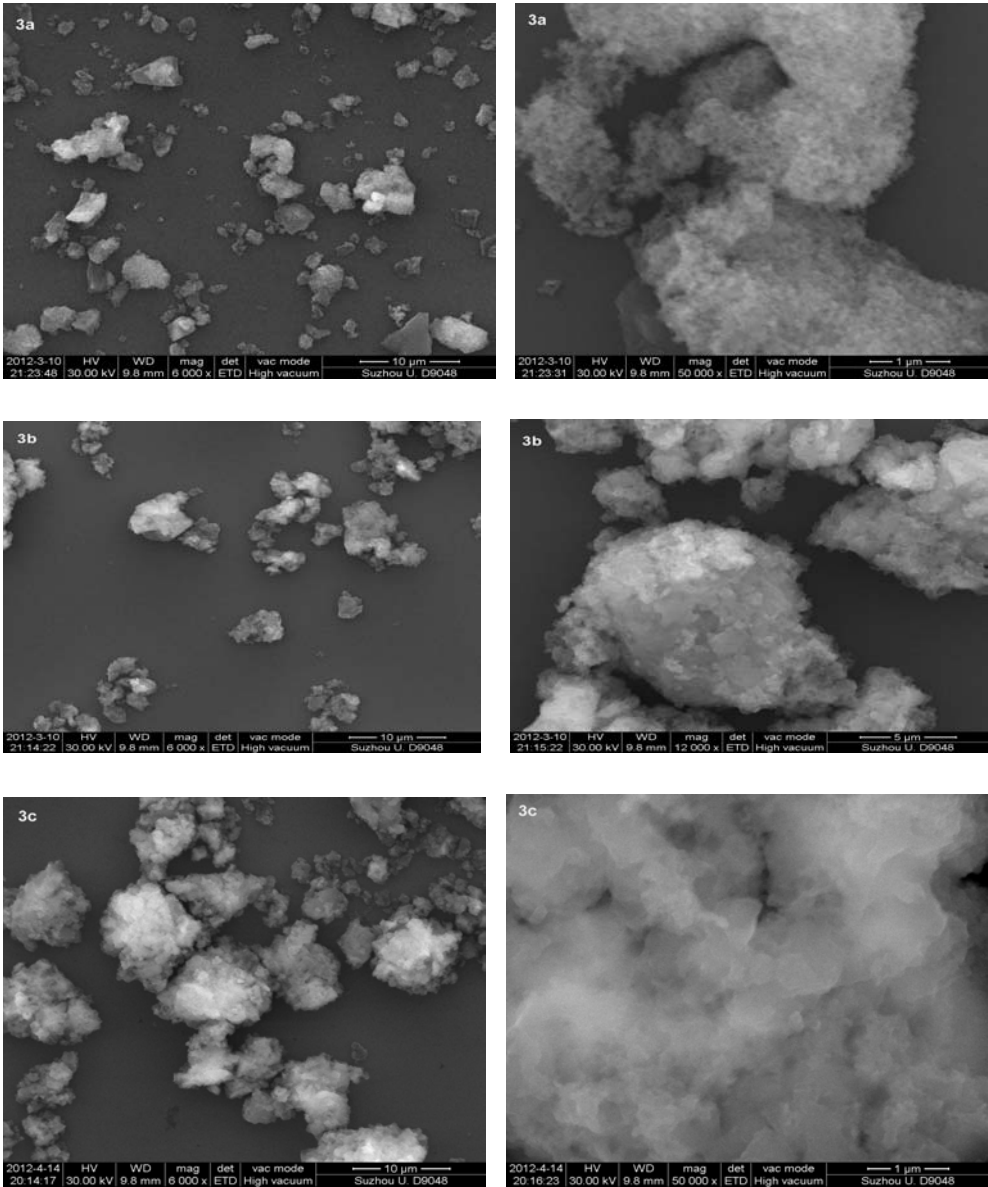


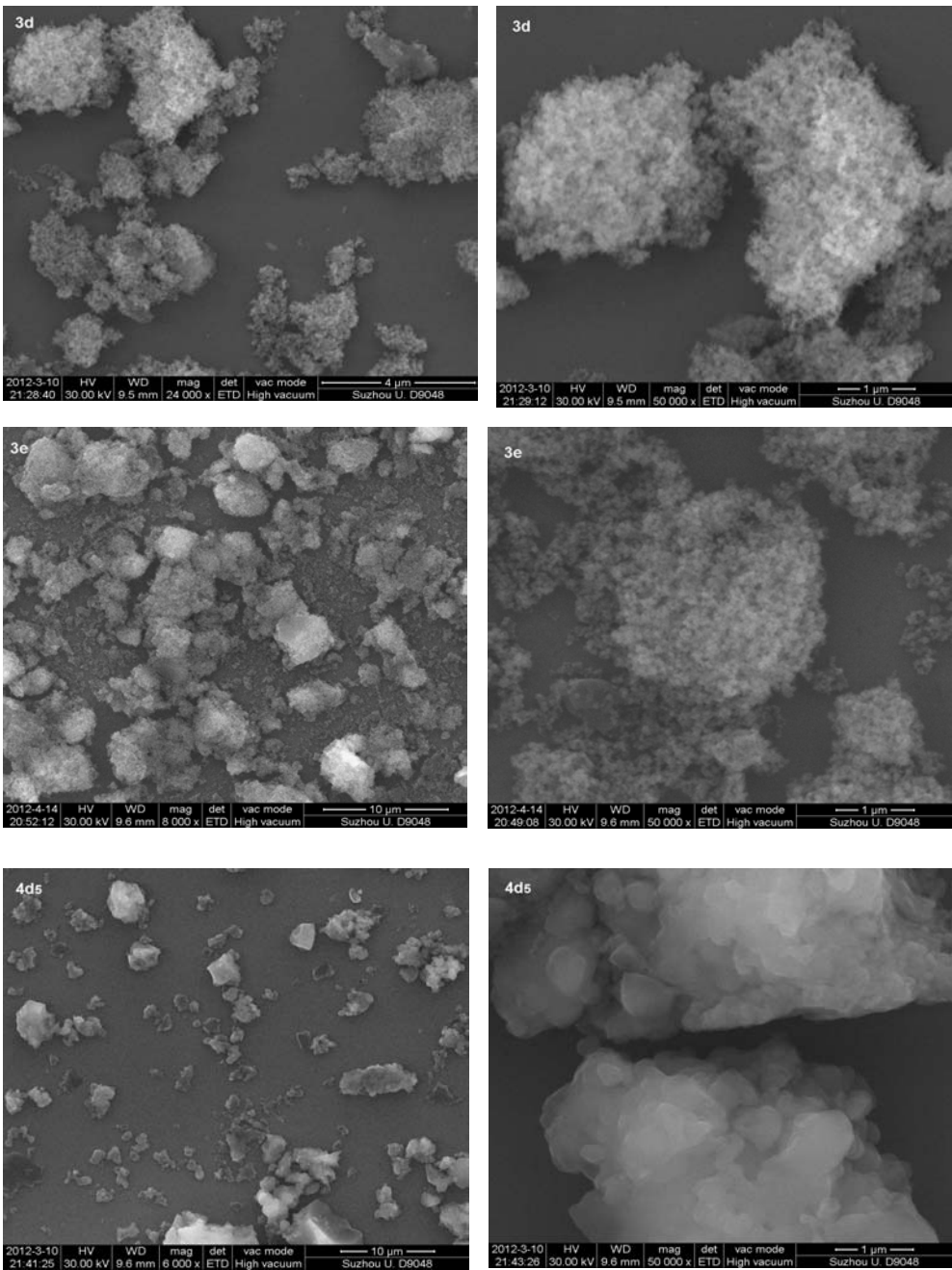




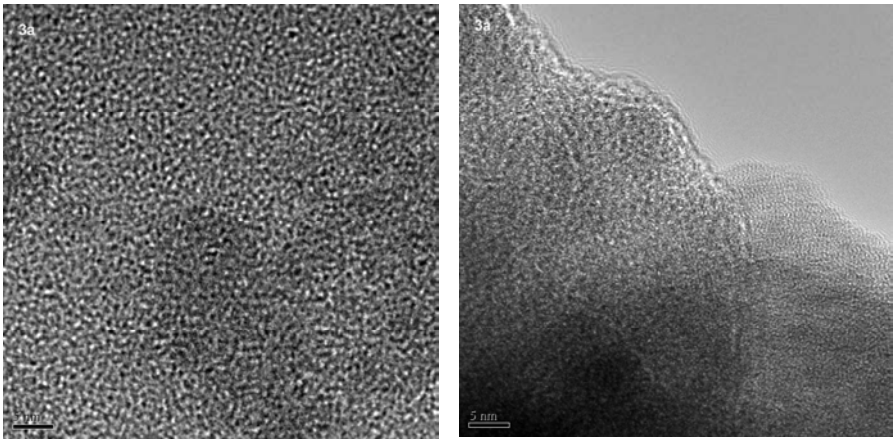


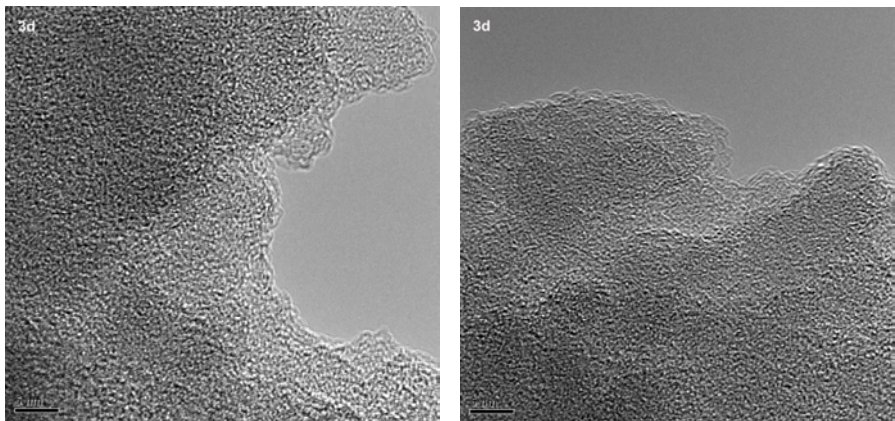
6. SEM





7. HRTEM





8. GC spectra

