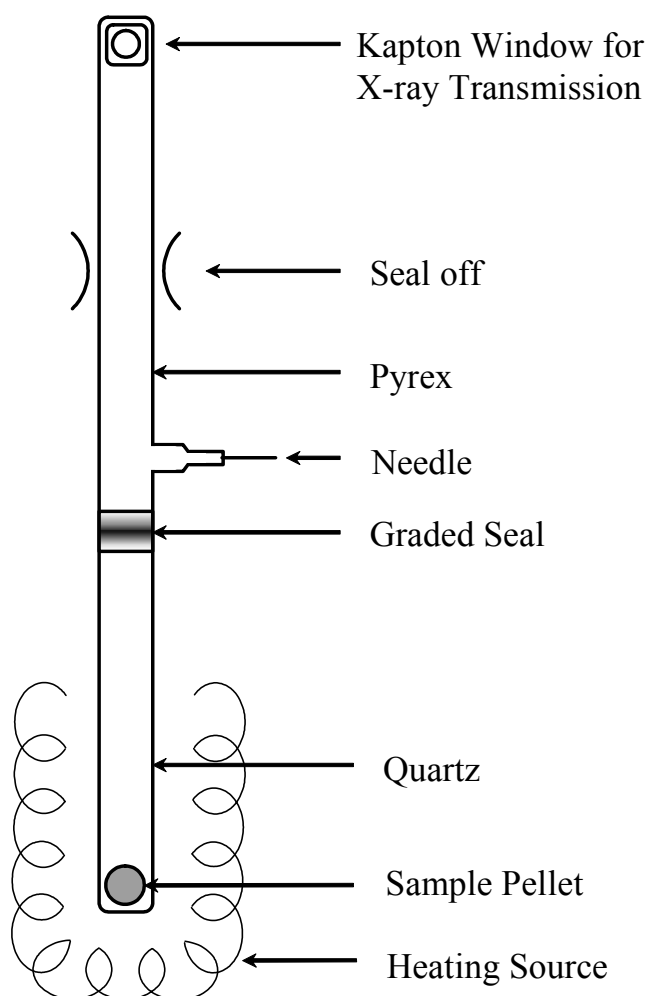
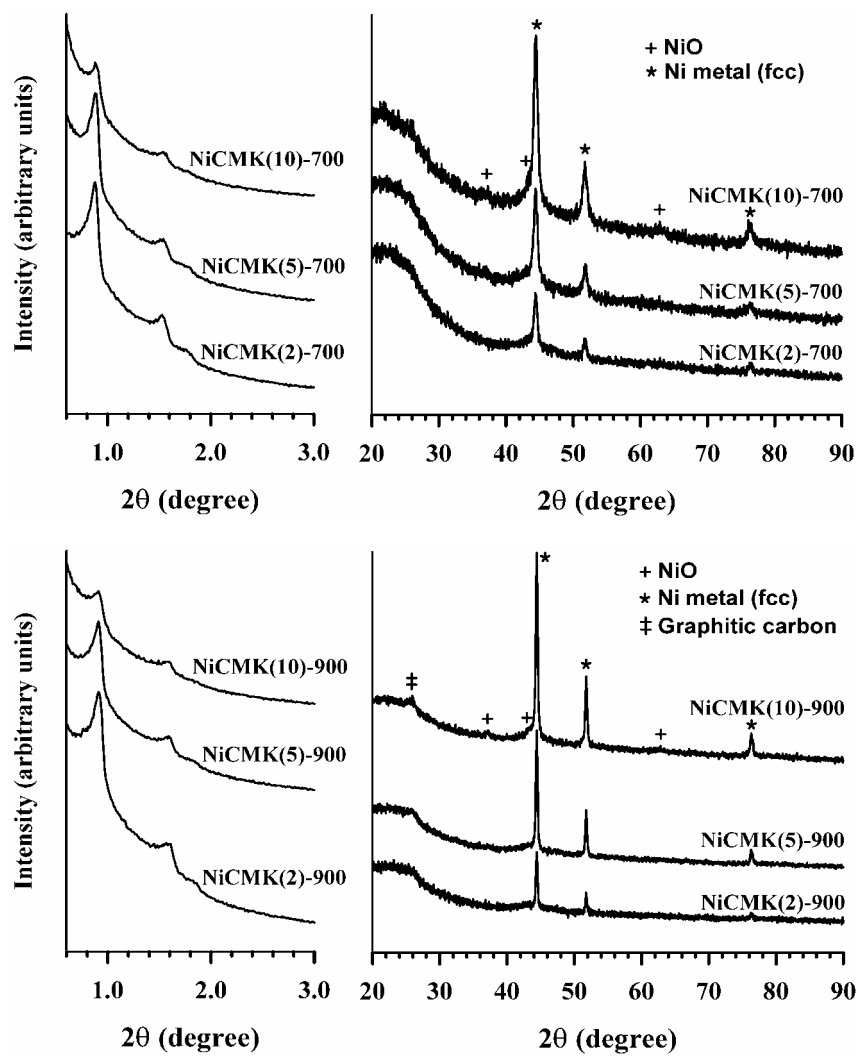


**Design of XAFS cell; XRD patterns for NiCMK carbons; XRD patterns for FeCMK carbons.**

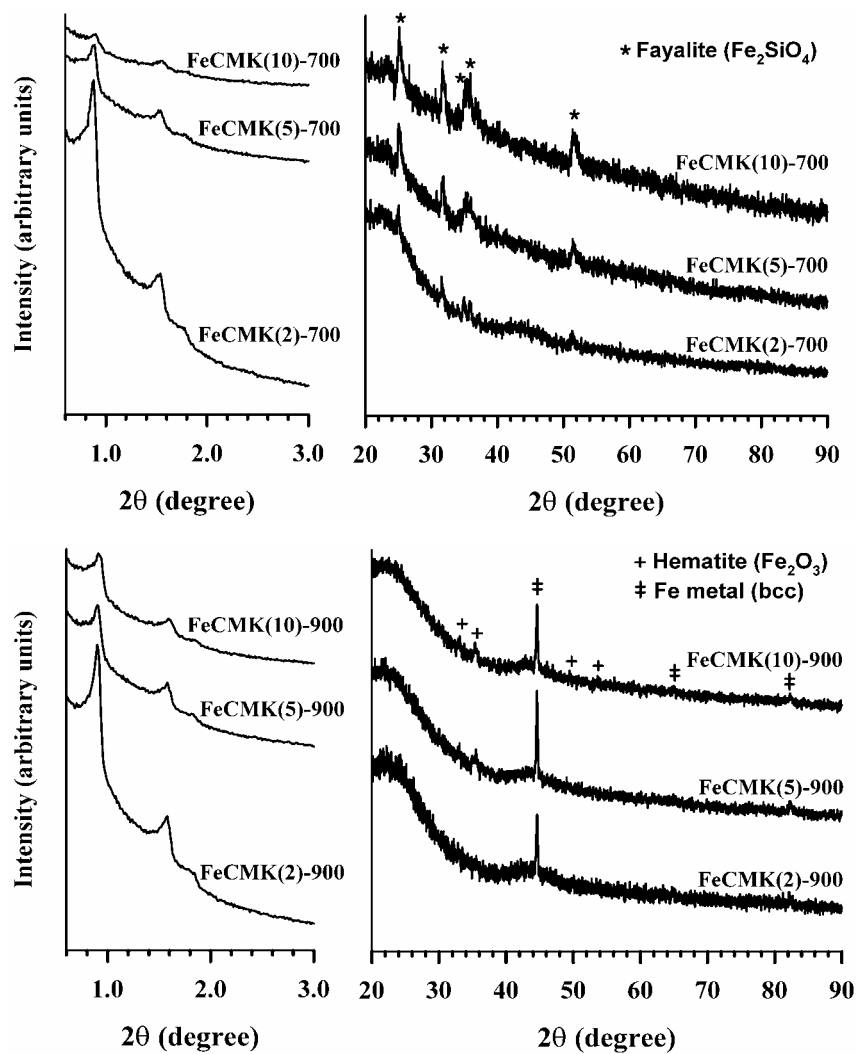
**<Electronic Supplementary Information>**



**Fig. S1** XAFS cell designed for probing the reaction between SBA-15 silica and furfuryl alcohol mixture with heating at ambient pressure. The silica template was loaded with  $\text{Co}(\text{NO}_3)_2$  corresponding to 5 wt % Co loading to SBA-15 silica. Inside of reactor was maintained with nitrogen environment to prevent oxidation of cobalt and carbon.



**Fig. S2** XRD patterns for NiCMK carbons synthesized using  $\text{Ni}(\text{NO}_3)_2$  supported-SBA-15 as a template and furfuryl alcohol as a carbon precursor. The synthesis conditions and sample notation are the same as for CoCMK except that  $\text{Ni}(\text{NO}_3)_2$  was used.



**Fig. S3** XRD patterns for FeCMK carbons synthesized using Fe(NO<sub>3</sub>)<sub>3</sub> supported-SBA-15 as a template and furfuryl alcohol as a carbon precursor. The synthesis conditions and sample notation are the same as for CoCMK except that Fe(NO<sub>3</sub>)<sub>3</sub> was used.