

Supporting Materials for

**The formation of active phases in Pt-containing catalysts for bicyclohexyl dehydrogenation  
in hydrogen storage**

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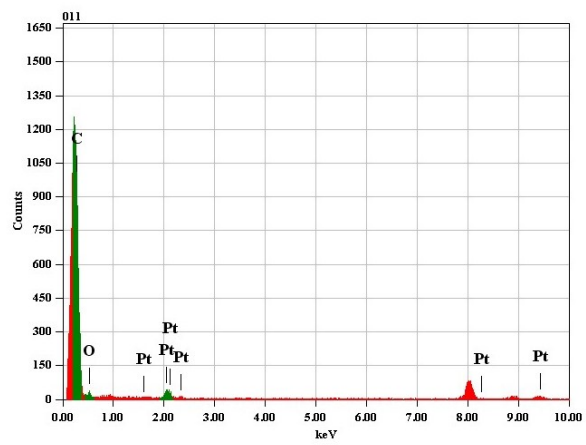
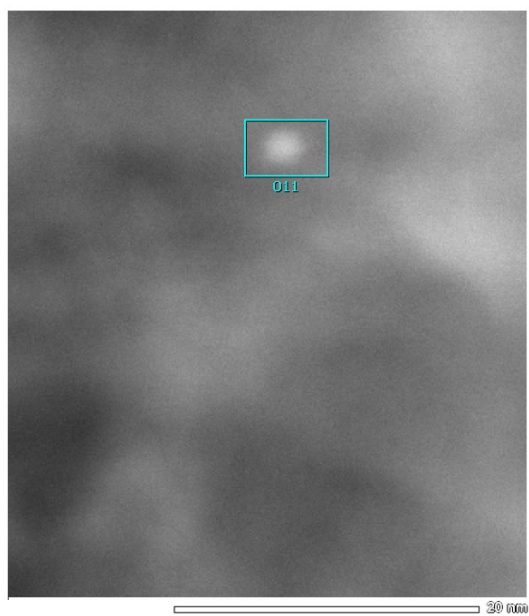
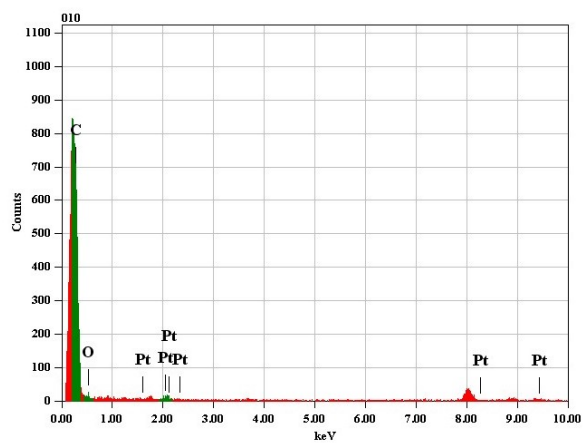
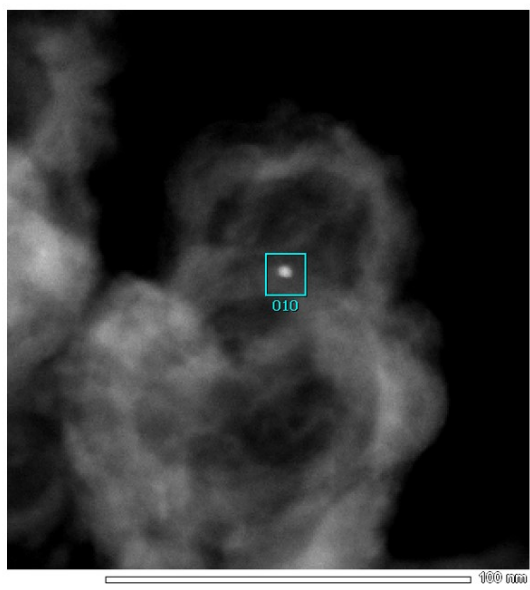
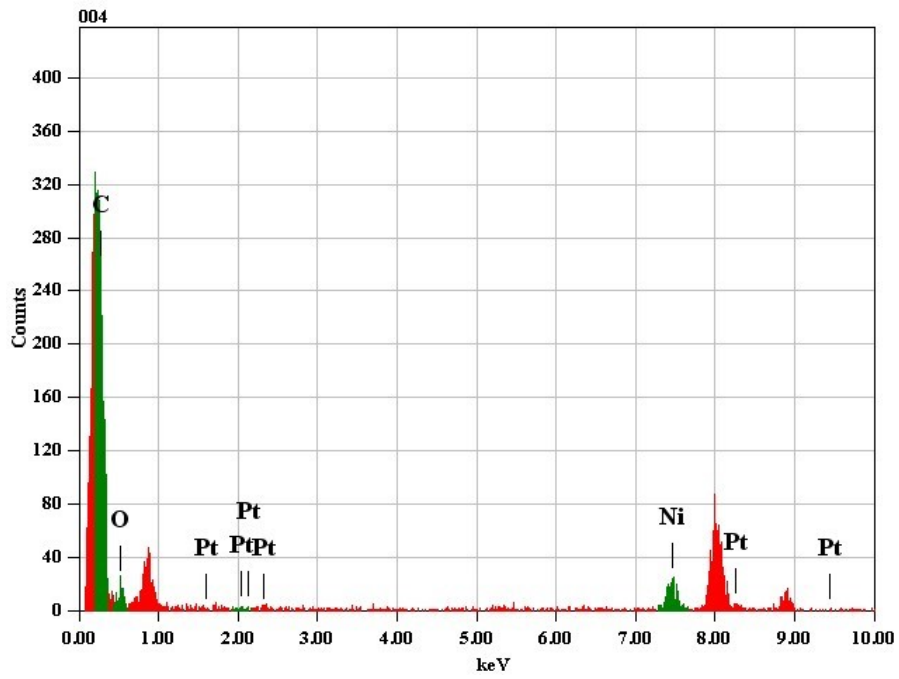
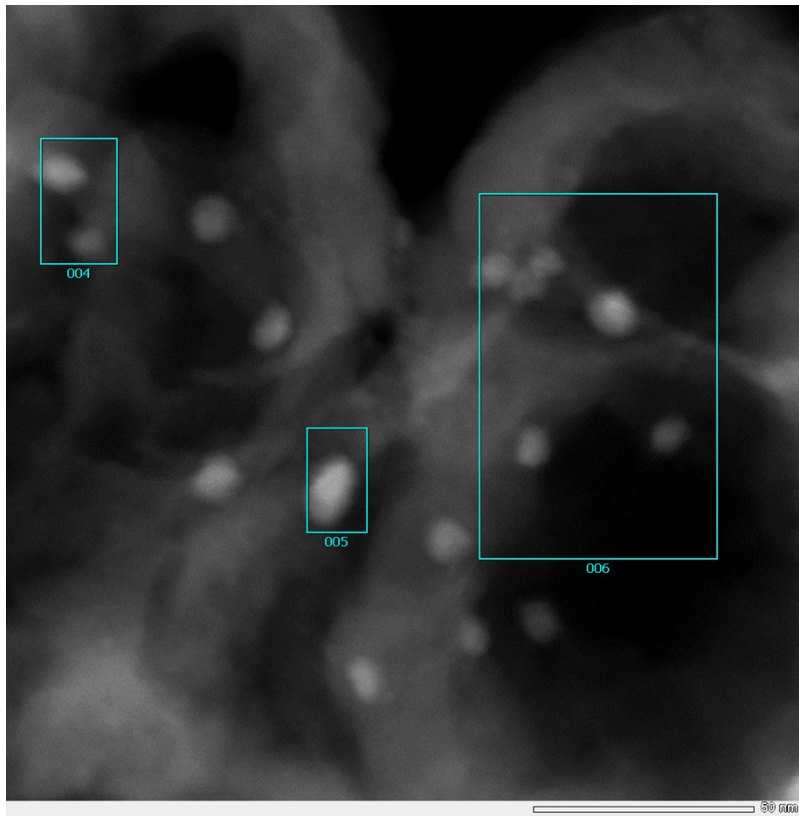


Fig. S1. EDX spectrum of the Pt/C catalyst before reduction.



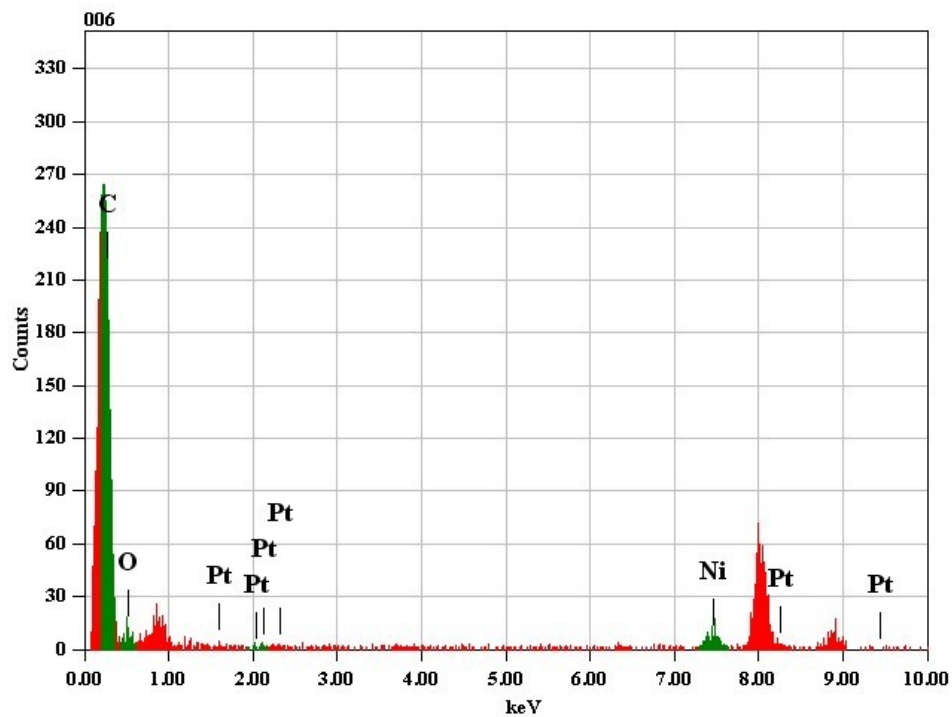
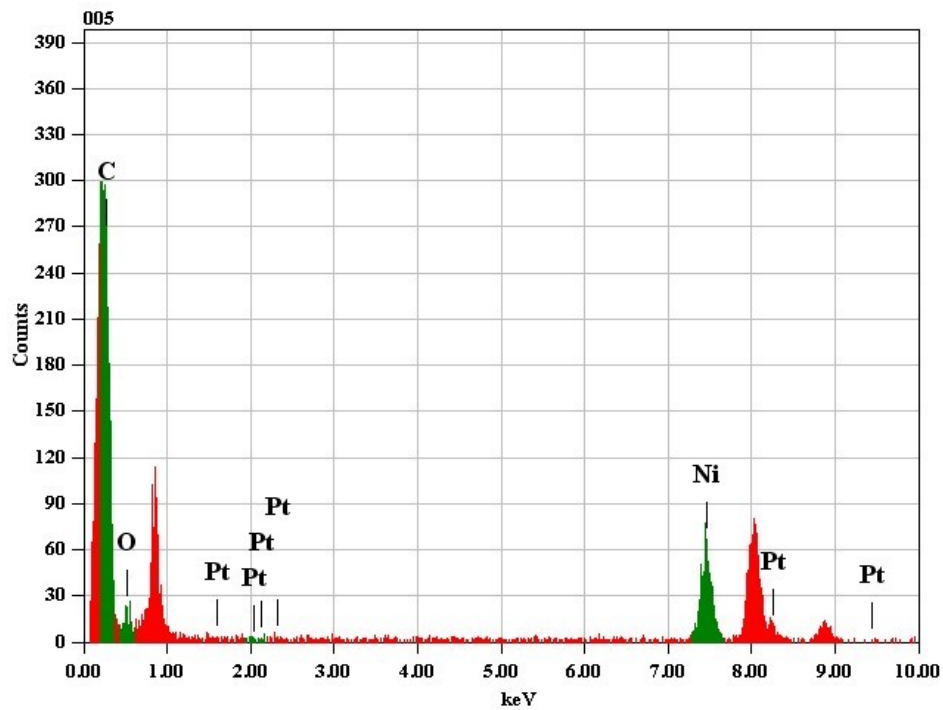
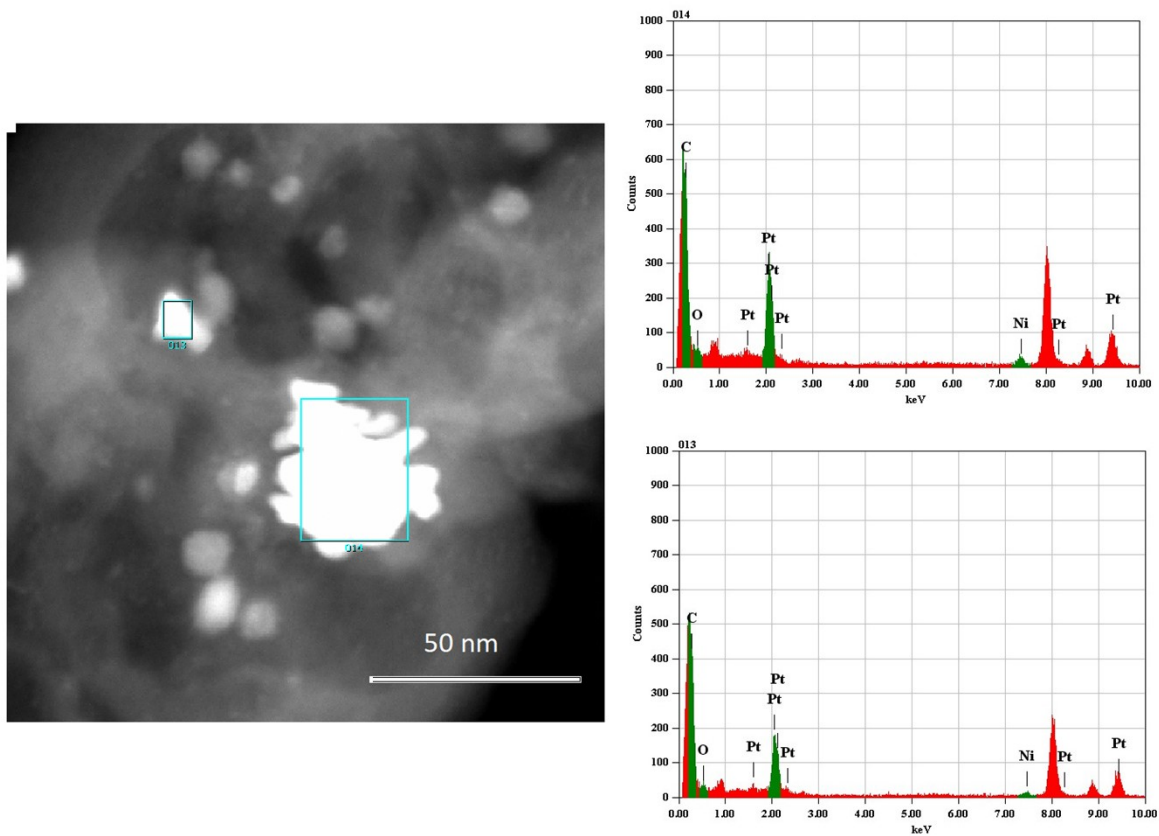
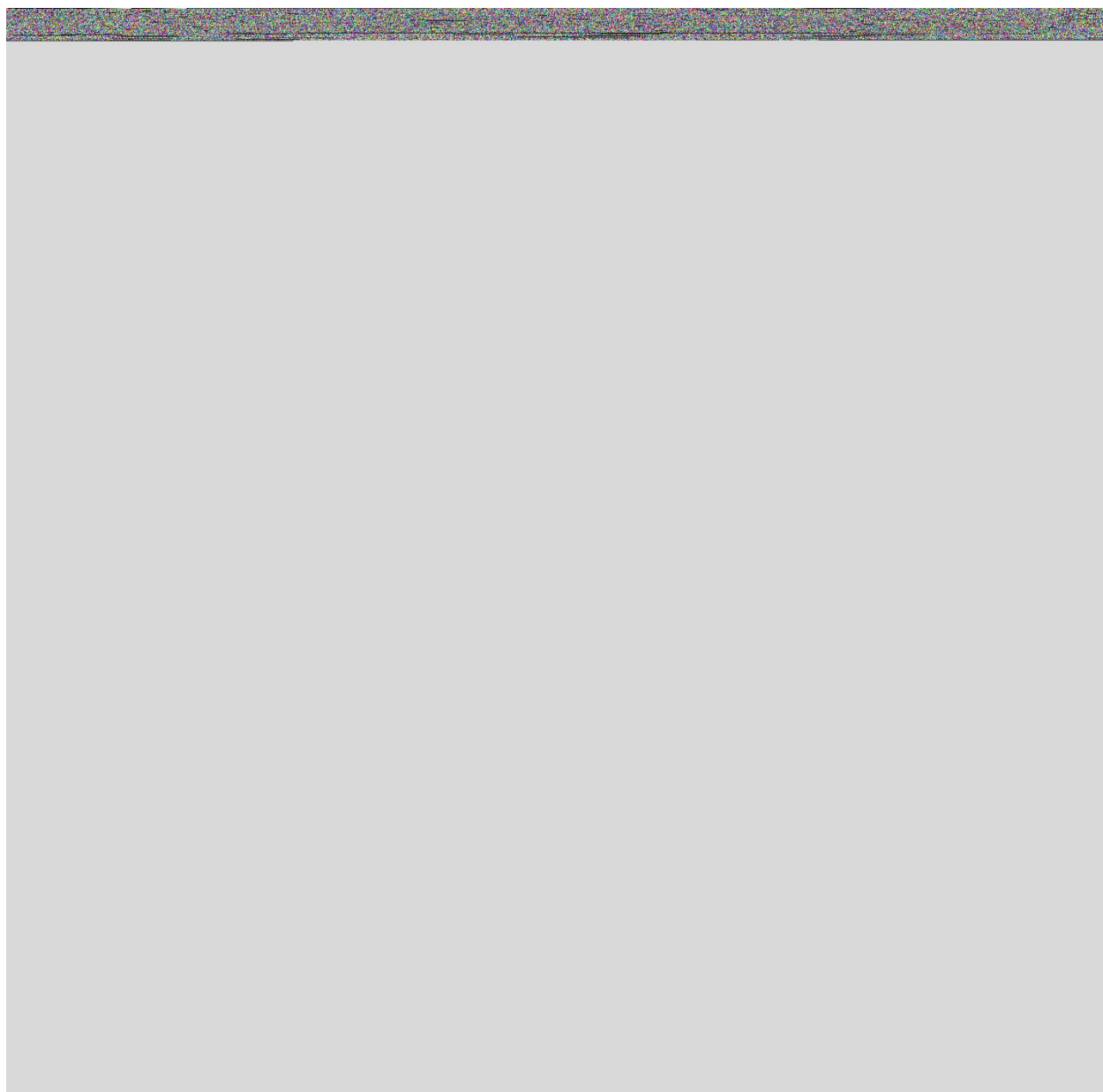


Fig. S2. EDX spectrum of the Pt/Ni/C catalyst before reduction.



**Fig. S3.** TEM image and EDX spectrum of the Pt/Ni/C catalyst. Process spreading and enlargement of metal particles are connected with platinum atoms.



**Fig. S4.** TEM image and EDX spectrum of the Pt/Ni-Cr/C catalyst before reduction..

Table S1. Experimentally determined interplane distances  $d_{\text{ex}}$  (nm) from FFT image of the Pt/C catalyst in comparison with values of  $d_{\text{ref}}$  (hkl) [1,2] for platinum compounds and graphite.

$d_{\text{exp}}$ , nm	$d_{\text{ref}}$ , nm (hkl)				
	PtO Fm-3m	Pt <sub>2</sub> O Pn-3m	Pt Fm-3m	PtC Fm-3m	Graphite
0.36-0.42	0.397 (011)	0.395 (100)	0.392 (100)	0.386 (100)	0.336 (002)
0.20-0.22		0.226 (111)	0.226 (111)	0.224 (111)	0.213 (100)
0.18-0.19			0.196 (200)	0.194 (200)	0.180 (102)

[1] ICDD (2018). *The Powder Diffraction File*. International Centre for Diffraction Data, Newtown Square, Pennsylvania, USA

[2] R. Lamber, N. Jaeger and G. Schulz-Ekloff, *Surface Sci.*, 1990, **227**, 15.