Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics

Electrochemical performance of annealed cobalt–benzotriazole/CNTs catalysts towards the oxygen reduction reaction

Adina Morozan, Pascale Jégou, Bruno Jousselme* and Serge Palacin

CEA-Saclay, DSM/IRAMIS/SPCSI/LCSI, 91191 Gif-sur-Yvette Cedex, France

*bruno.jousselme@cea.fr

Electronic Supplementary Information

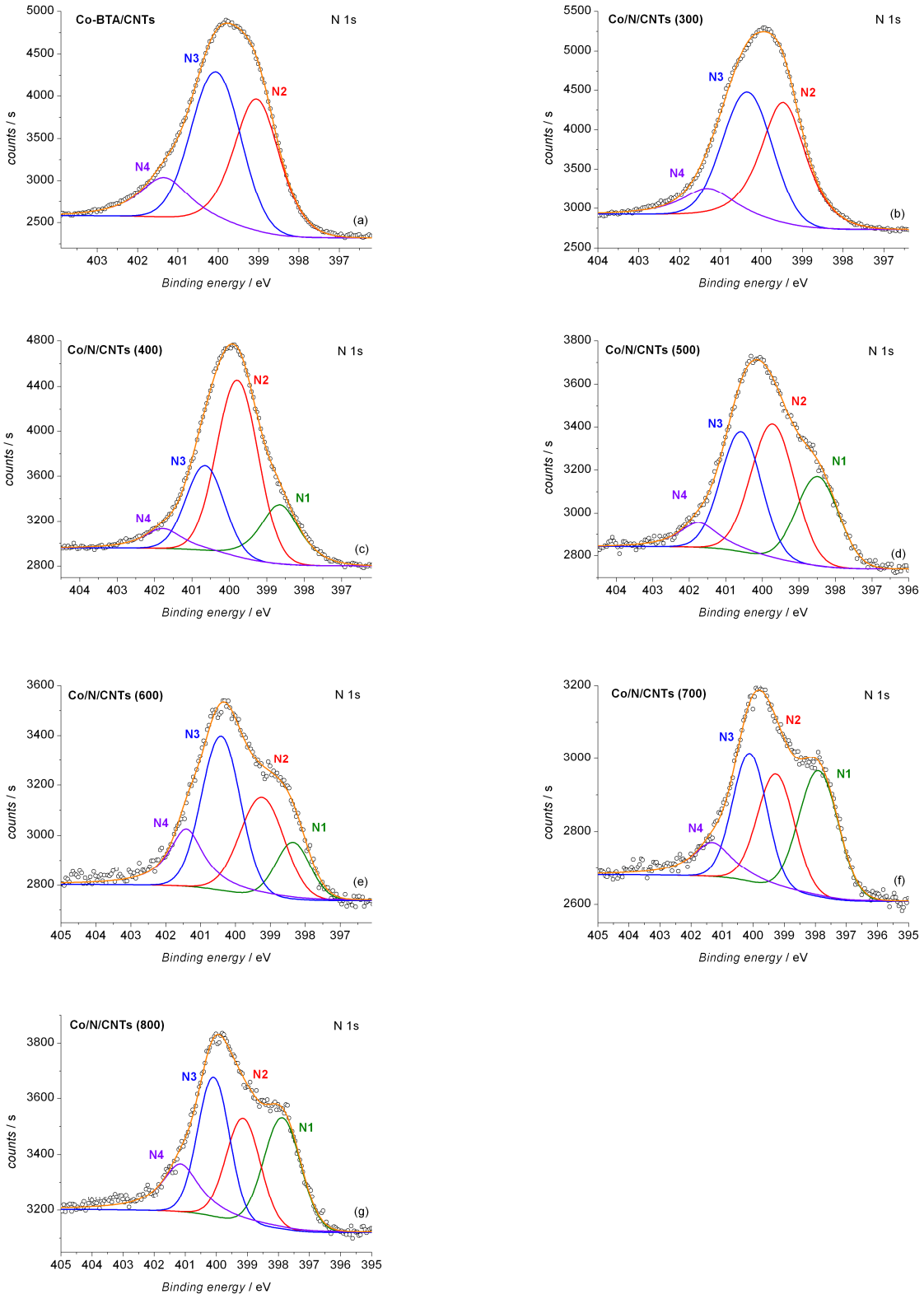

Figure S1. Decomposed XPS N1s spectra of the samples: a). Co-BTA/CNTs, b). Co/N/CNTs (300), c). Co/N/CNTs (400), d). Co/N/CNTs (500), e). Co/N/CNTs (600), f). Co/N/CNTs (700), and g). Co/N/CNTs (800).

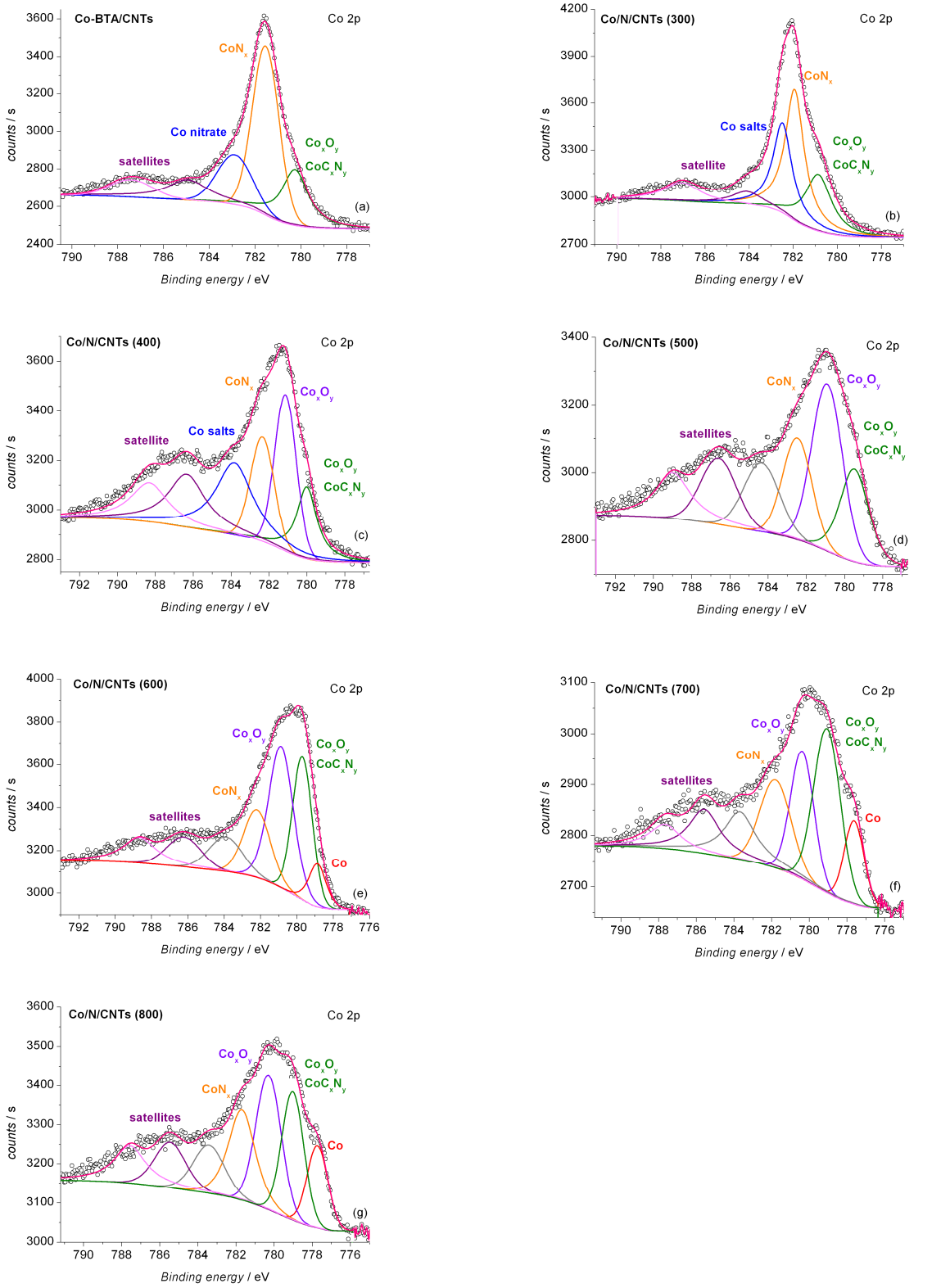

Figure S2. Decomposed XPS Co2p spectra of the samples: a). Co-BTA/CNTs, b). Co/N/CNTs (300), c). Co/N/CNTs (400), d). Co/N/CNTs (500), e). Co/N/CNTs (600), f). Co/N/CNTs (700), and g). Co/N/CNTs (800).

Table S1. Distribution of N species obtained from the decomposition of the N 1s peaks by XPS				
Sample	N-type			
	N1 pyridinc (BE/eV)	N2 CoN_x, nitrile (BE/eV)	N3 pyrrolic (BE/eV)	N4 triazole moiety, quaternary (BE/eV)
Co-BTA/CNTs	-	399.1	400.2	401.3
Co/N/CNTs (300)	-	399.5	400.3	401.3
Co/N/CNTs (400)	398.6	399.8	400.7	401.8
Co/N/CNTs (500)	398.5	399.7	400.6	401.7
Co/N/CNTs (600)	398.4	399.2	400.4	401.4
Co/N/CNTs (700)	397.9	399.3	400.1	401.3
Co/N/CNTs (800)	397.9	399.2	400.1	401.2

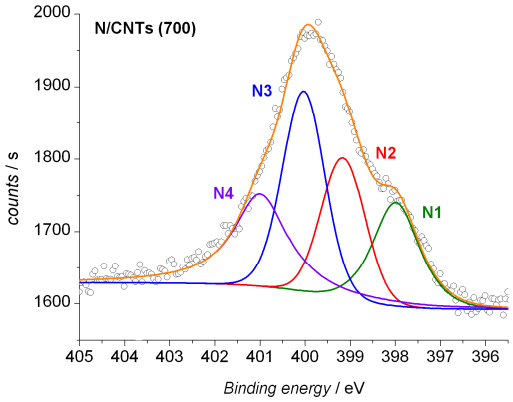

Figure S3. Decomposed XPS N1s spectrum of N/CNTs (700). (N2 correspond to nitrile groups)

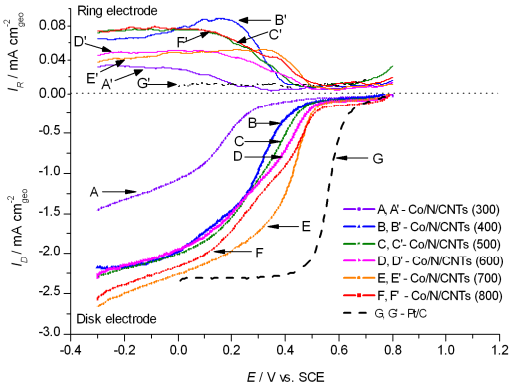

Figure S4. RRDE measurements of ORR on Co/N/CNTs catalysts (in the range of 300-800 ºC) and Pt/C. The ring electrode was polarized at 1 V vs. SCE. Electrolyte: O_2-saturated 0.5 M H_2SO_4, scan rate: 5 mV s^{-1}, rotation speed: 500 rpm, and catalyst loading: 425 µg cm^{-2} for Co/N/CNTs series and 81.50 μg_{Pt} cm^{-2} for Pt/C.