

Electronic Supplementary Information

**XPS characterization of Vanadium Carbide species formed during the  
atomization process in Electrothermal Atomic Absorption Spectroscopy**

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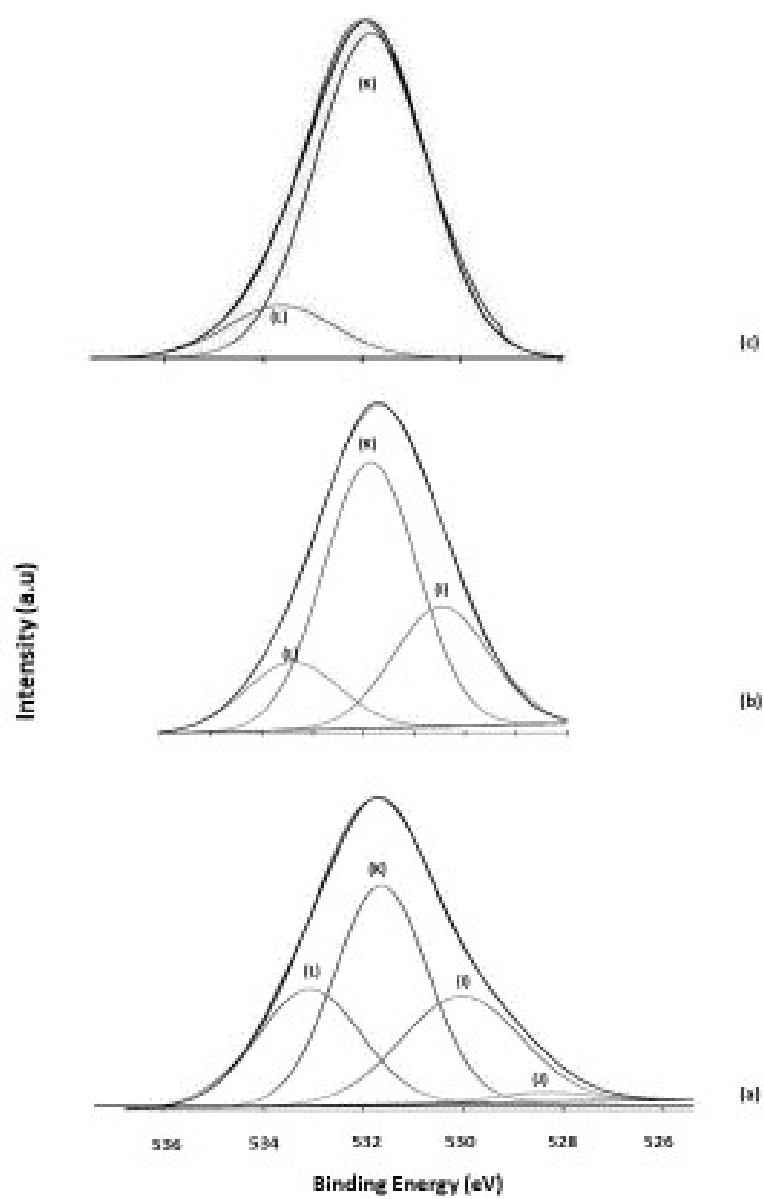


Figure S-1. High resolution O 1s spectra of PGP-T after: (a) drying at T = 120 °C; (b) ashing at T = 1400 °C; and (c) atomization at T = 2850 °C. Keys: (I):  $\underline{O}-V^{5+}$ ; (K):  $C=\underline{O}$ ; (L):  $C-\underline{O}$ ; and (J):  $\underline{O}-V^{2+}$ .

Table S-1. V 2p<sub>3/2</sub>, C 1s and O 1s binding energies of selected species compiled from literature references.

Vanadium							
V <sup>5+</sup> / V <sub>2</sub> O <sub>5</sub>		V <sup>4+</sup> / VO <sub>2</sub>		V <sup>2+</sup> / VO		V <sup>δ+</sup> / V <sup>4+</sup> / V <sub>carbide</sub>	
B.E. (eV)	References	B.E. (eV)	References	B.E. (eV)	References	B.E. (eV)	References
517.0	37	515.0	36	512.70	30	513.2	35
517.20	30	515.65	37	512.7	36	513.4	29
517.2	34	515.95	30				
517.3	35	516.0	34				
517.4	40	516.1	35				
517.5	36						
517.9	40						

Carbon							
C <sub>carbide</sub>		C-O		C=O		Carbonate	
B.E. (eV)	References	B.E. (eV)	References	B.E. (eV)	References	B.E. (eV)	References
280.8 – 281.3	39	285.3 – 287.0	41	286 – 290	41	288.4	38
281.0	38	285.6	35	286.7	29	289 – 290	41
282.2	29	285.9	29	287.93	40	289.95	40
282.4	35	286.25	40	288.14	40	290.2	40
282.6	38	286.42	40	~289	42		
282.8 – 283.5	39	~287	42				

Oxygen							
O-V <sup>5+</sup>		O-V <sup>4+</sup>		O-V <sup>2+</sup>		O <sup>-</sup> / OH <sup>-</sup> / H <sub>2</sub> O	
B.E. (eV)	References	B.E. (eV)	References	B.E. (eV)	References	B.E. (eV)	References
529.8	37	529.40	30	531.10	30	532.1	35
530.00	30	530.0	36	531.1	36		
530.1	36	530.0	37				
530.8	35	530.1	35				

