SUPPORTING INFORMATION

Assembling Vanadium (V) Oxide and Gelatin into Novel Bionanocomposites with Unexpected Rubber-like Properties

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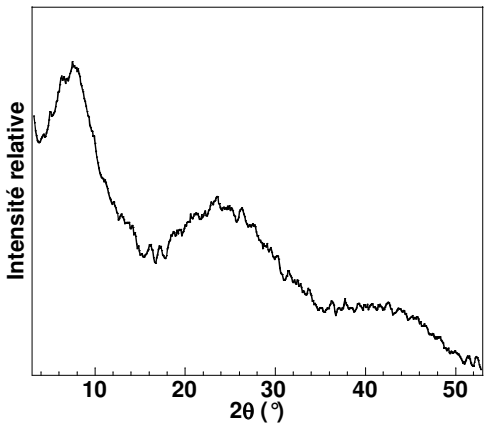
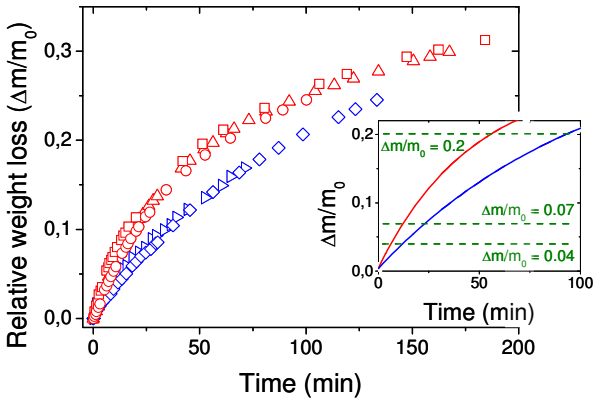


X-ray diffraction diagram of OG

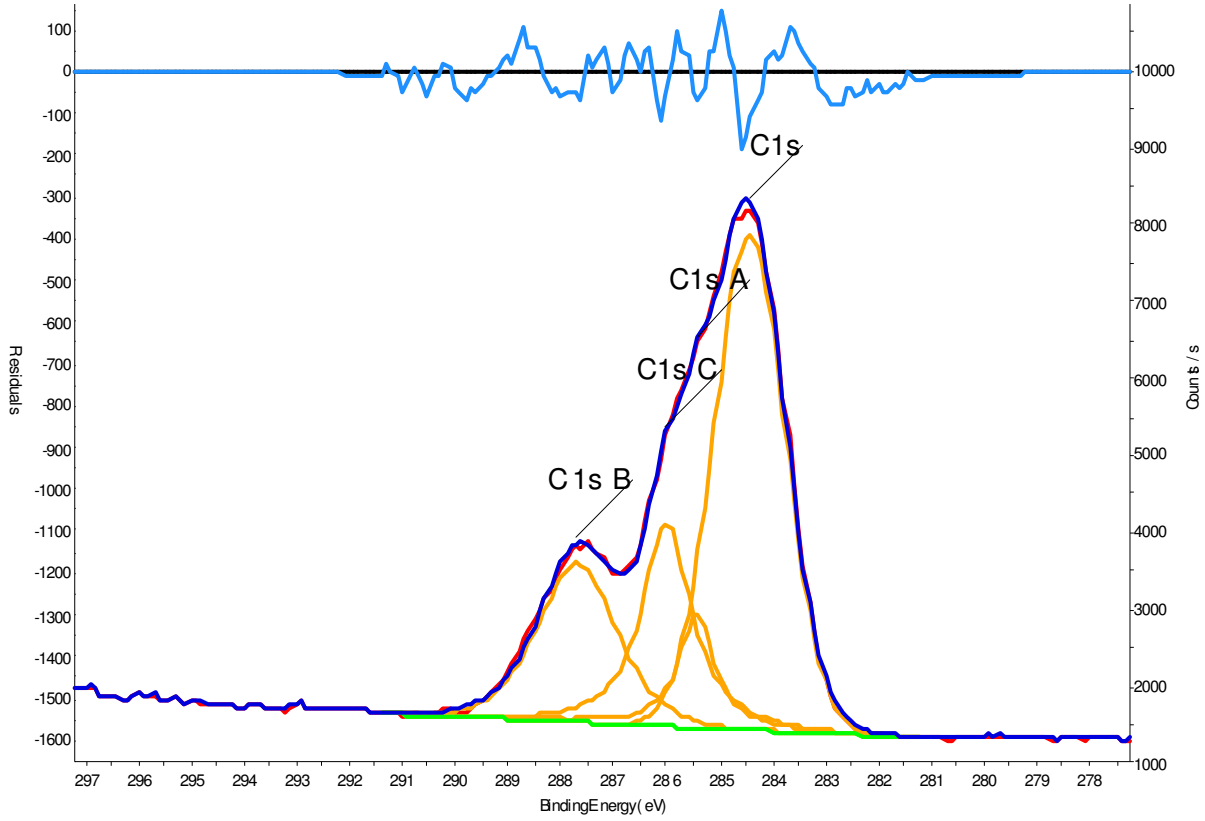


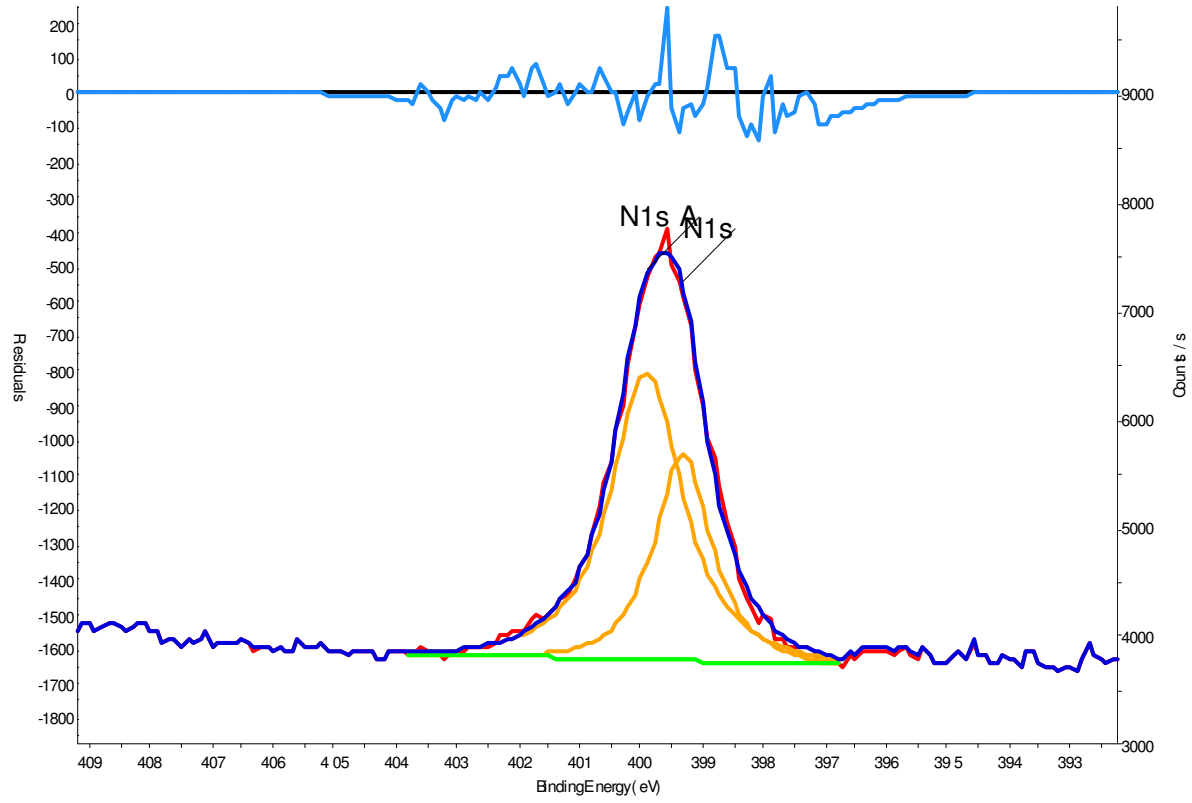
Representation of the relative weight loss as a function of time for gelatin simple coacervates (red symbols) and OVP (blue symbols) measured at T = 23 °C and H.R. = 54 %. For each kind of coacervate, the different symbols correspond to different samples prepared and studied in the same conditions. The inset represents, by a green dash line, at which relative weight loss the mechanical measurements have been performed. The red curve and the blue curve are simple exponential fits of the relative weight loss data corresponding respectively to the gelatin simple coacervates and OVP in the time range between 0 and 100 min.

Table 1 - XPS fit parameters for V2p, O1s, C1s and N1s signals (BE are referenced to the O1s signal taken at 530.0 eV)

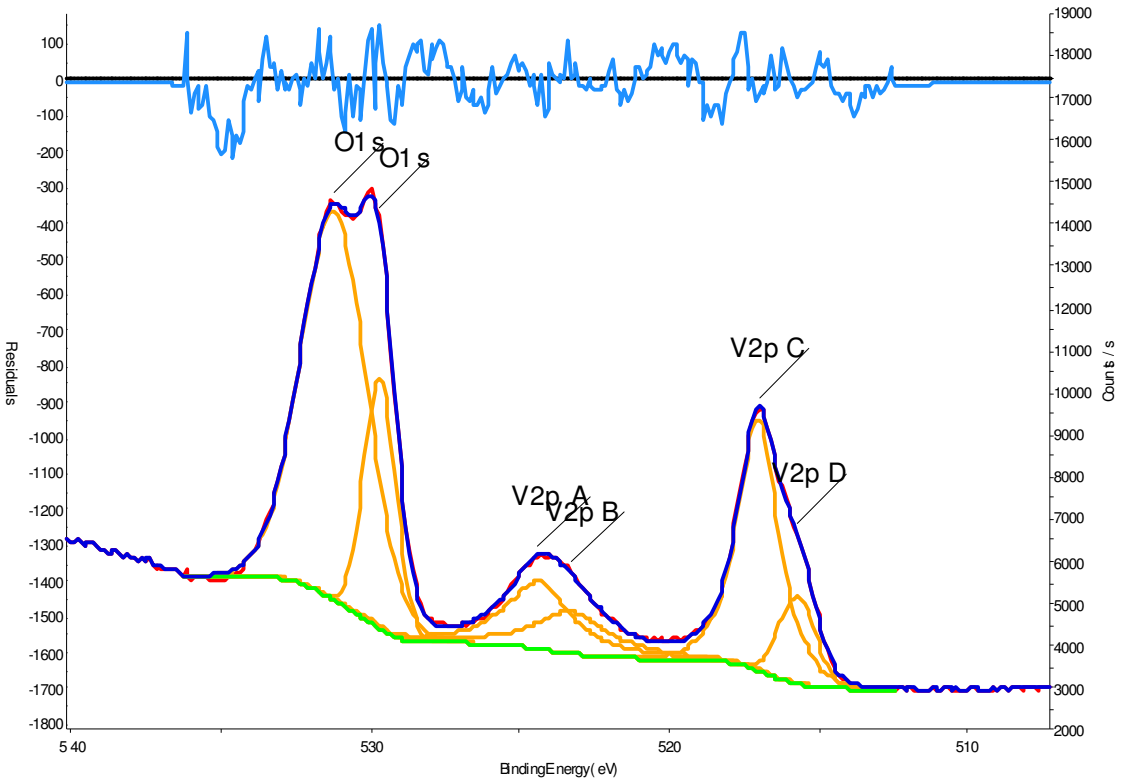
Sample	Core line	BE (eV)	Area (cps.eV)
RP	V^{5+} $2p_{3/2}$	517.0	11762.3
	V^{5+} $2p_{1/2}$	524.4	5790.2
	V^{4+} $2p_{3/2}$	515.7	3183.7
	V^{4+} $2p_{1/2}$	523.3	4076.3
	O1s	530.0	8087.6
		531.2	25830.8
	C1s	284.4	10884.3
		285.4	1786.9
		286.0	3929.2
		287.7	4102.2
	N1s	399.3	2614.6
		399.9	4734.9
V_2O_5 1,8H_2O (ref.)	V^{5+} $2p_{3/2}$	517.2	27845.3
	V^{5+} $2p_{1/2}$	524.4	11748.5
	O1s	530.0	24277.7
		531.5	4275.4
		533.1	1901.2
	C1s	284.3	12342.7
		285.7	2623.6
		288.3	1276.3

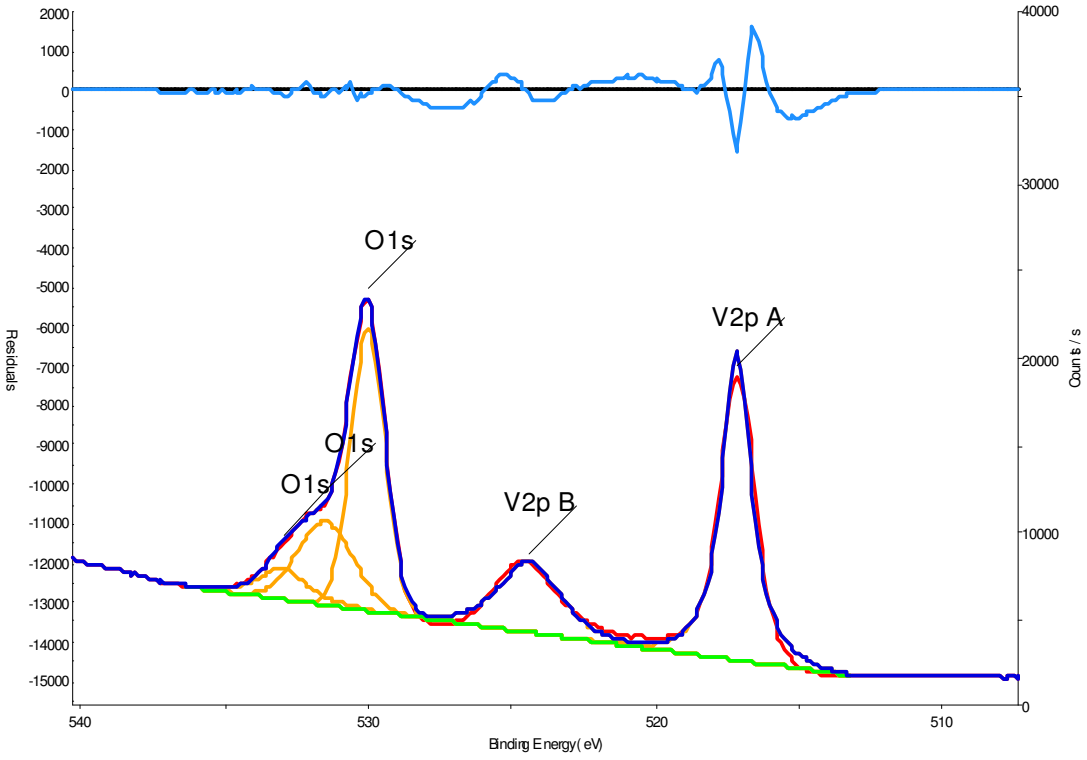
Core level of C1s (top) and N1s (bottom) for RP

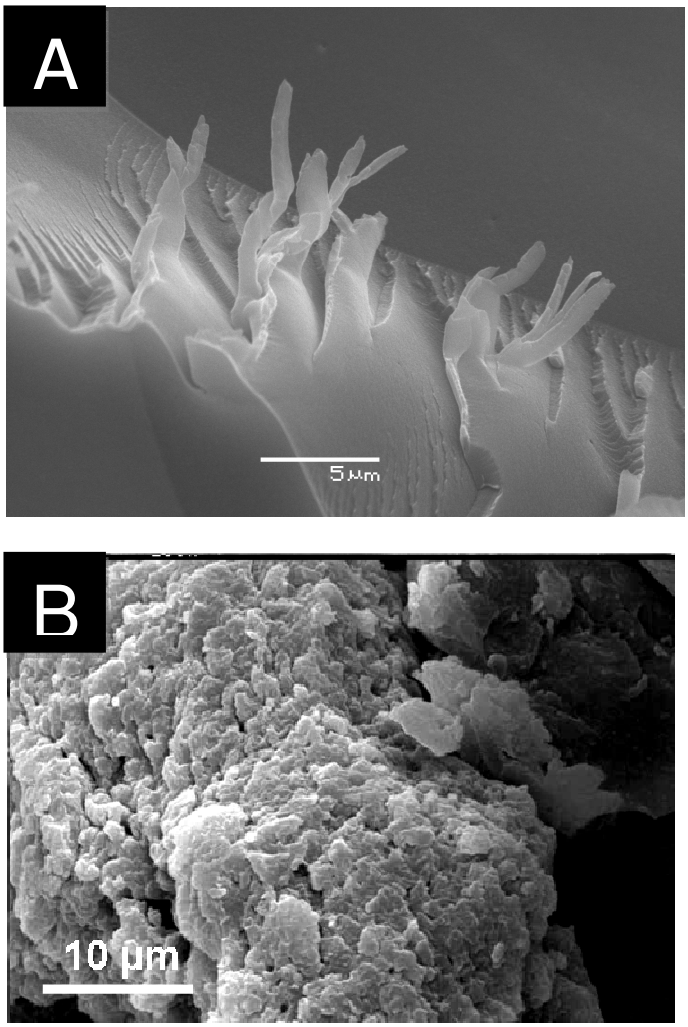




Core level of O1s and V2p for RP (top) and V_2O_5, $1.8H_2O$ (bottom)







SEM images of fractured samples obtained after aging for (a) 1 day and (b) 14 days mixtures of acidified vanadate solutions ([V] = 0.25 mol. L^{-1}) and gelatin (2 wt%).