Supplementary material

Optimization of mica surface hydroxylation in water vapor plasma monitored by optical emission spectroscopy

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Supplementary Figures S1, S2 and Table S1

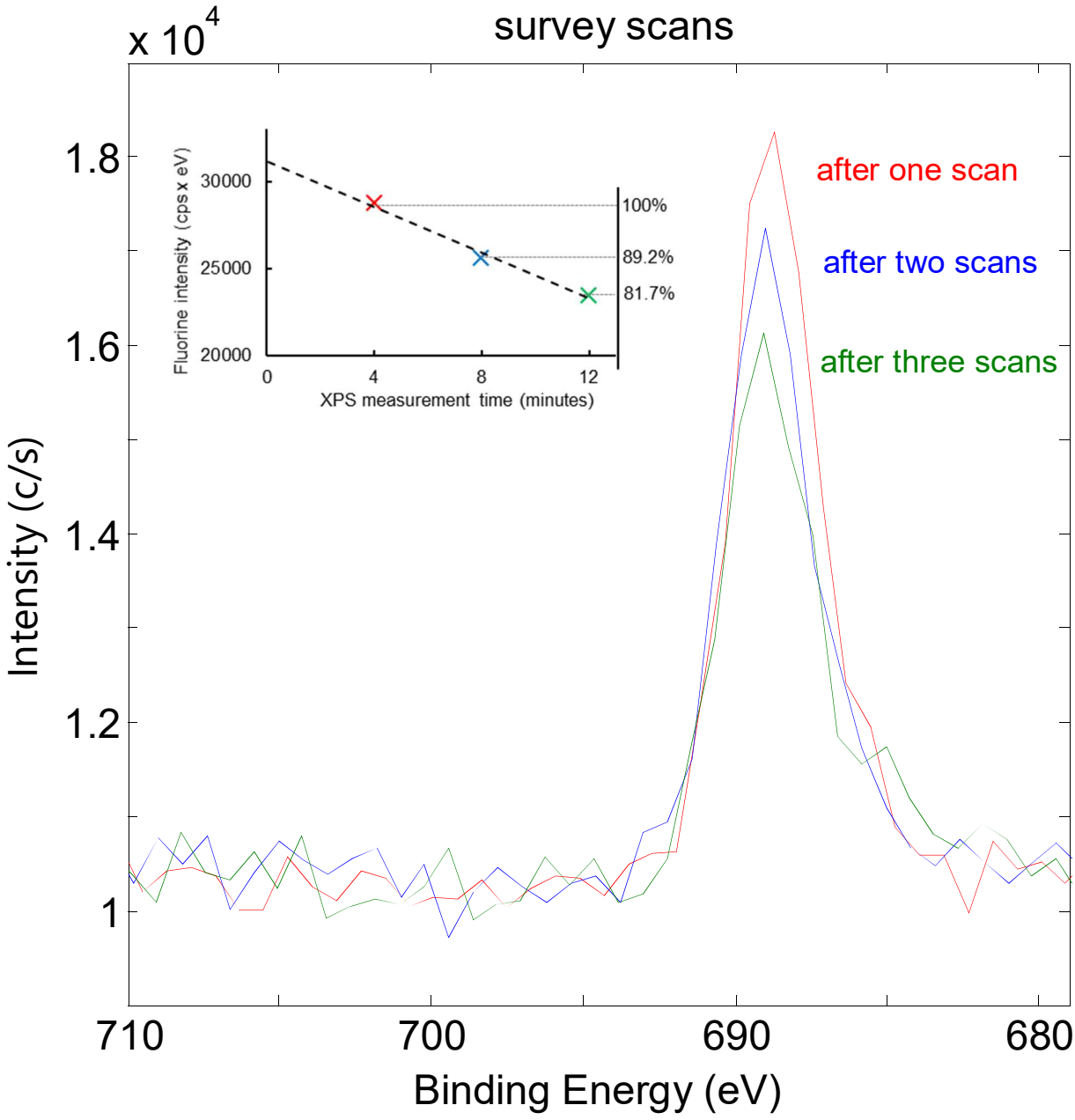

Figure S1. Three consecutive XPS survey scans (duration four minutes each) at the same measurement position showing the range where the fluorine signal is located for a mica sample treated with an optimized water vapor plasma followed by derivatization. From scan to scan, on average a 10% decrease of the fluorine content is observed (see linear regression in the inset).

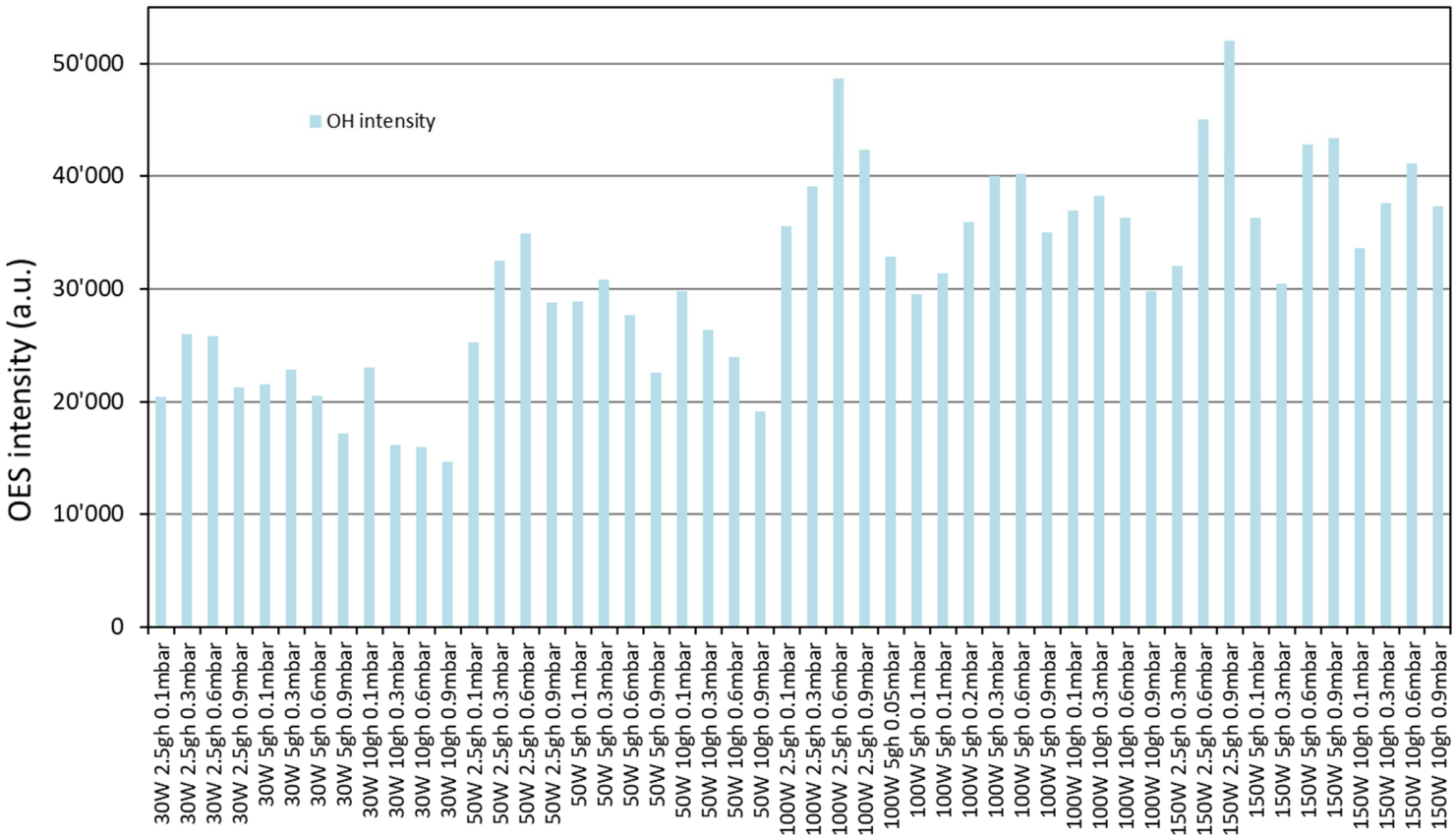

Figure S2. OES hydroxyl intensity as a function of all varied water vapor plasma conditions (input power, water flow rate, and chamber pressure).

Table S1

Elemental composition obtained from XPS survey scans for mica substrates treated with wet-chemical hydroxylation processes. The values are given in atomic percentage concentrations[a] and have been normalized to 100%.

treatment of freshly cleaved mica[b]	C	O	Si	Al	K	F
boiling in water (30 min. at 95 °C)	22.6	66.1	5.2	5.0	0.6	0.5
piranha solution (30 min. in 3:1 H_2SO_4 : H_2O_2)	43.2	48.7	4.0	3.4	0.4	0.3

[a] Relative uncertainties in the measured concentration are estimated to be approximately ±10% (for concentrations ≤ 2 at.%, it can reach ±20% or even more).
[b] After each treatment, the derivatization procedure using (tridecafluoro-1,1,2,2-tetrahydrooctyl)dimethylchlorosilane for 30 minutes duration and subsequent rinsing with ethanol was applied.