Supporting Information

A novel alkali-activation of titanium substrates to grow thick and covalently bound PMMA layers

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Estimation of the PMMA layer thickness by TGA

The FIB cross-section analysis allowed estimating a local PMMA thickness. In order to get global information from the entire surface, TGA experiments were performed and the average thickness of the PMMA layer evaluated. The polymer was grown on a Ti sheet with a thickness of 0.15 mm, in order to be able to measure a weight loss after the polymer decomposition process.

Firstly, the PMMA-coated Ti sheet was cut and its initial mass ($m_{PMMA/Ti}$) was measured and found equal to 69.12 mg. Then, its weight variation was recorded while the temperature has been increased up to 577 °C (see **Figure 1a**). The sample was then cooled down to room temperature. In order to verify that the entire polymer was decomposed, a second recording of the weight variation was performed on the same sample. As expected, a weight decrease was only observed during the first heating, whereas it remained constant during the second heating cycle.

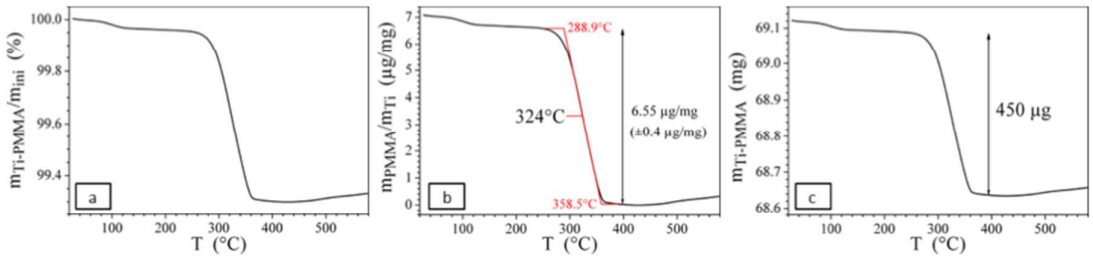

Figure S1. a) weight loss recorded on PMMA-coated Ti under air; b) polymer mass in µg by mg of Ti; c) PMMA weight loss.

Thus, from the polymer decomposition (**Figure 1b**), we obtained a weight loss of 450 µg, which corresponds to the PMMA mass (m_{PMMA}), shown in **Figure 1c**.

Finally, the polymer thickness was calculated taking into account the Ti and PMMA densities (d_{Ti} = 4.51 g/cm^3 and d_{PMMA} = 1.2 g/cm^3 respectively) and the Ti foil thickness (t_{Ti}).