Supporting Information

for

Fundamental edge broadening effects during focused electron beam induced nanosynthesis

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Additional experimental data

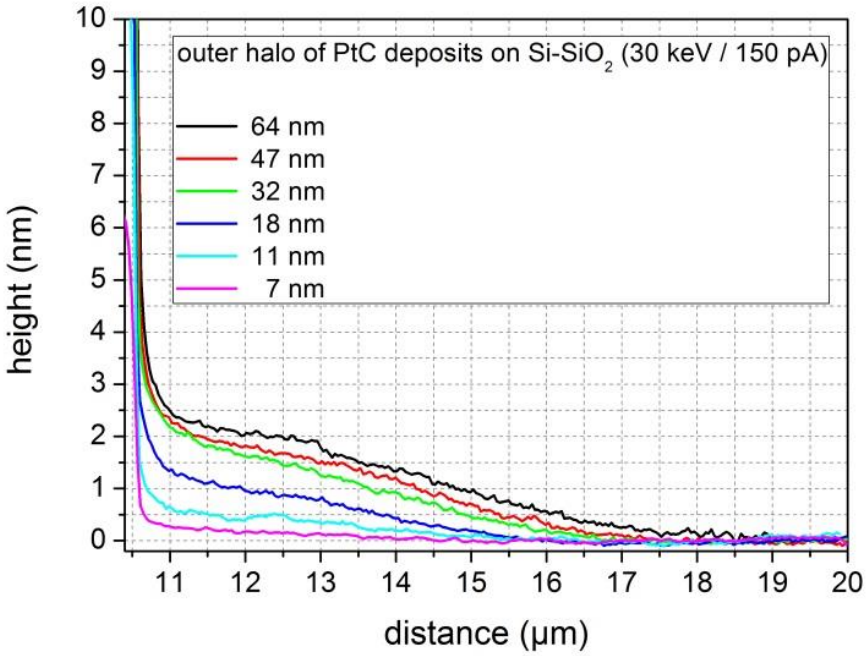

Figure S1: Detailed view of proximal layer shape and thickness for PtC deposits on Si–SiO_2 fabricated at 30 keV primary electron energy. The halo thickness is always found below 5% of the maximum deposit height (listed in legend) but below 3 nm for the investigated structures.

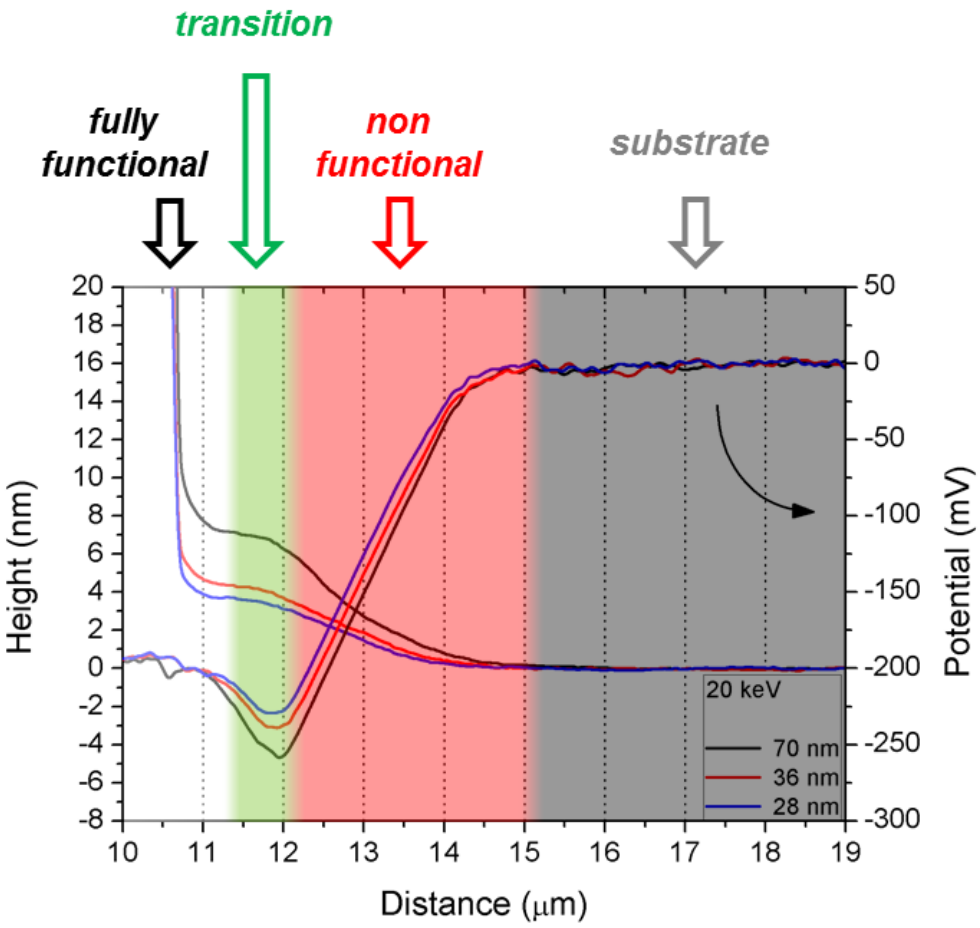

Figure S2: Correlated AFM height cross sections (left axis) together with corresponding surface potentials (right axis) for differently thick PtC deposits fabricated at 20 keV. The color code follows Figure 5 and indicates the plateaus aside the intended deposit partly as fully-funtional (white) followed by the transition area (green) which is partly conductive.

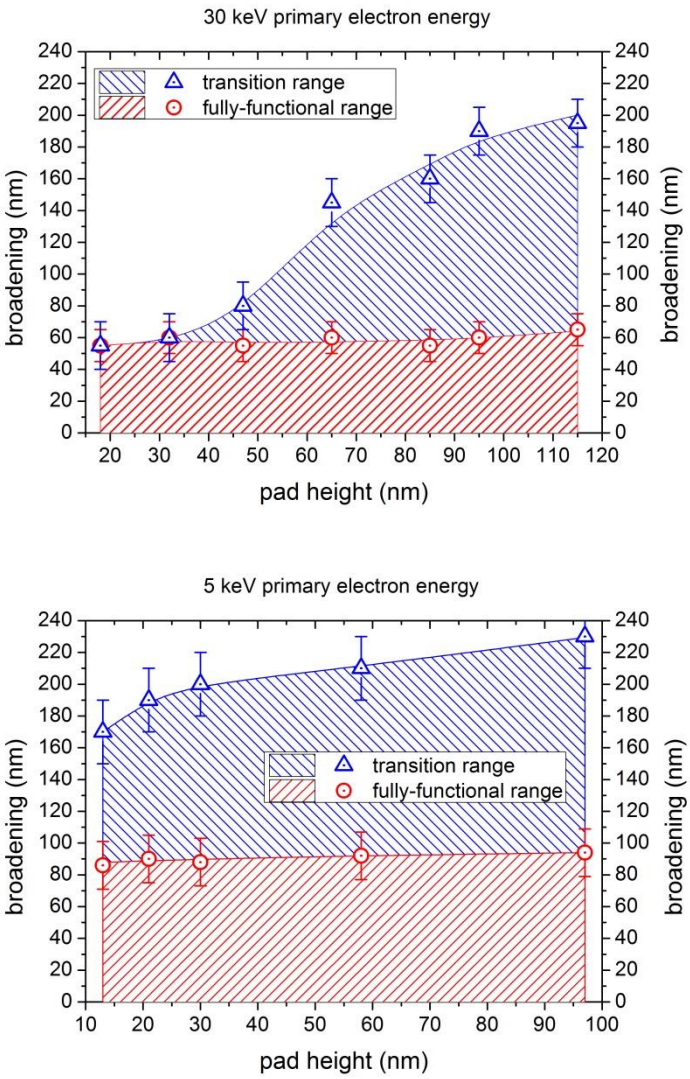

Figure S3: Considering the transition area as partly conductive and therefore influencing the lateral deposit sharpness with respect to its functionality, a scaling comparison for 30 keV (top) and 5 keV (bottom) is shown. As it can be seen the low energy deposits show slightly higher broadening even for thin deposits while highest energies and thinnest pads give highest lateral structure sharpness.

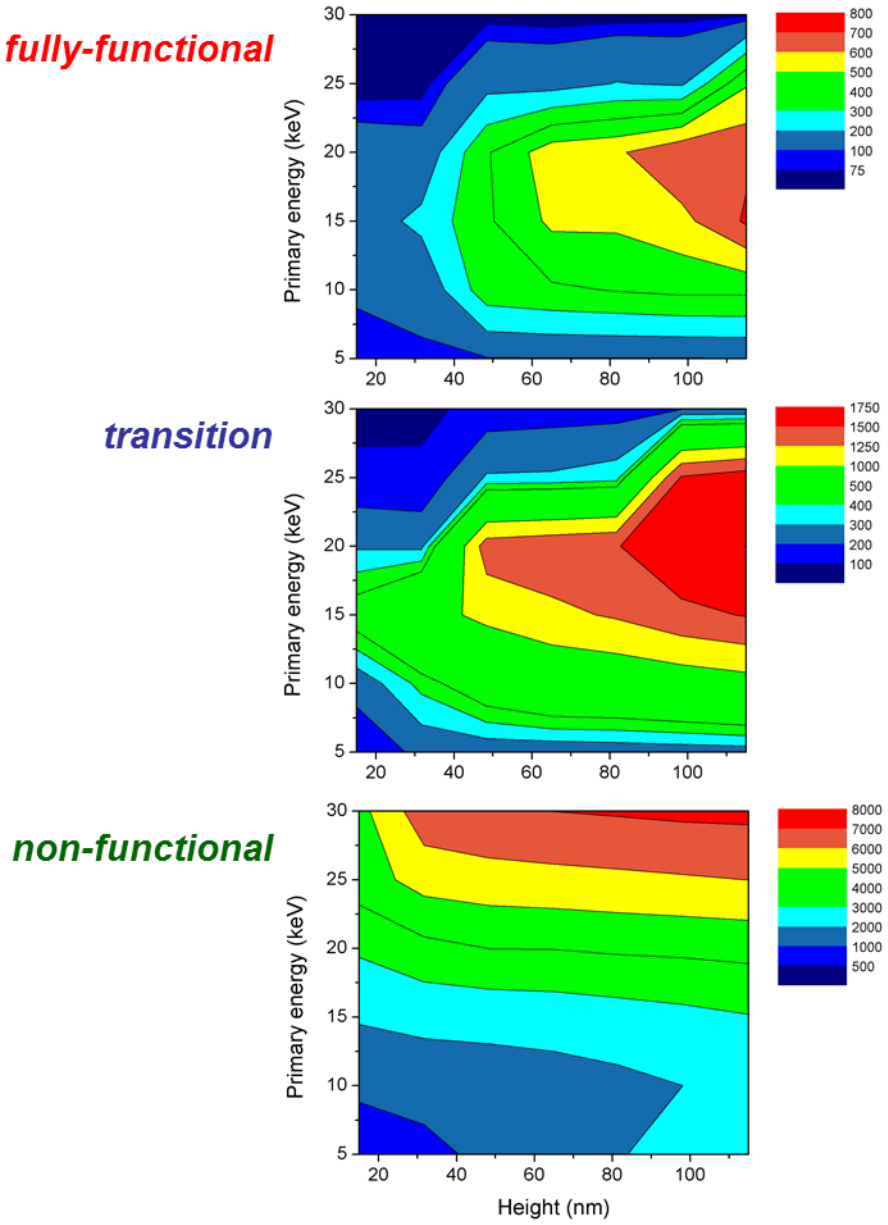

Figure S4: Contour plot representation of fully-functional (top), non-functional (bottom) and transition ranges with varying properties (center). As clearly evident intermediate energies should always be avoided while highest energies provide sharpest, functional edges.