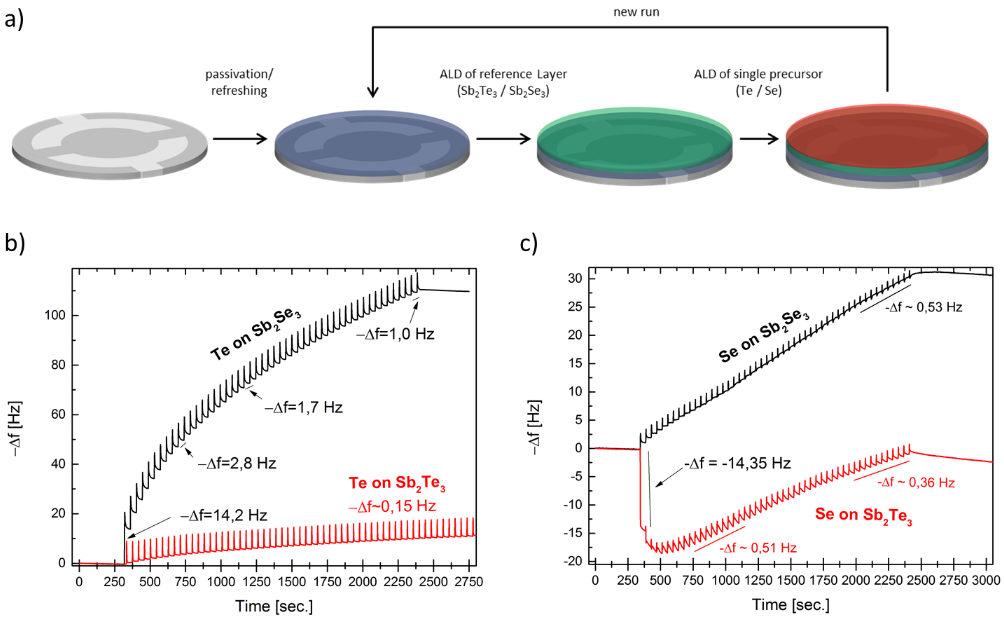

Figure 1. **(a)** Schematic illustration of the gathered experiment. The utilized QCM have been passivated with ALD to have an unpersuaded layer persisting of Al_2O_3 (blue layer). On this layer a reference Layer of 200 cycle of Sb_2Te_3 or Sb_2Se_3 has been deposited (green layer) with a thickness of approx. 5 nm, and is subsequently exposed to 50 pulses of a single precursor (red layer). The change in frequency during this surface treatment has been observed *in situ*. The experiment was repeated by passivating/refreshing the QCM again with Al_2O_3. **(b)** Comparison of the change in frequency between 50 cycles of $Te(SiEt_3)_2$ onto a Sb_2Se_3 surface (black) and 50 cycles of $Te(SiEt_3)_2$ onto a Sb_2Te_3 surface (red). **(c)** Change in frequency between 50 cycles of $Se(SiMe_3)_2$ onto a Sb_2Se_3 surface (black) and onto a Sb_2Te_3 surface (red).

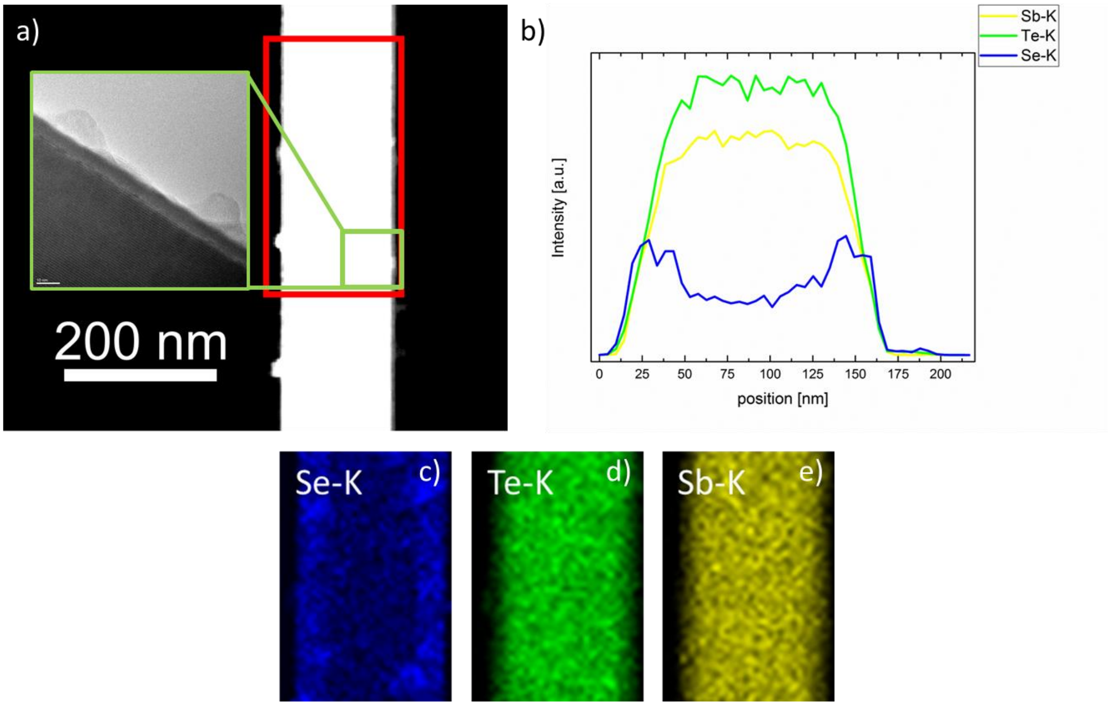

Figure 2. **(a)** STEM-image of a Sb_2Te_3 nanowire treated with 50 cycles of $Se(Et_3Si)_2$. The elemental mapping **(b)** is the summation of line scans in the marked area in **(a)** and displays the distribution of antimony, tellurium, and selenium across the wire **(b)**. It is obvious that a Se shell if formed around the Sb_2Te_3 nanowire. This observation is supported by the elemental distribution images of selenium a **(c)**, tellurium **(d)**, and antimony **(e)** in the area marked in **(a)**. The inlet in subfigure **(a)** shows an high resolution TEM image of the edge of the Nanowire.