SI Fig.2. Showing the overall  $2^{nd}$  ion signal of the  ${}^{18}O^-$ ,  ${}^{16}O^-$ ,  ${}^{18}O^-+{}^{16}O^-$  and selected cation species LaO<sub>2</sub><sup>-</sup>, NbO<sub>3</sub><sup>-</sup>, and SbO<sup>-</sup> species; the data is obtained by summing the signal in the depth region highlighted in figure 1a and then normalized to the total counts

