



Supplement of

New evidence on the microstructural localization of sulfur and chlorine in polar ice cores with implications for impurity diffusion

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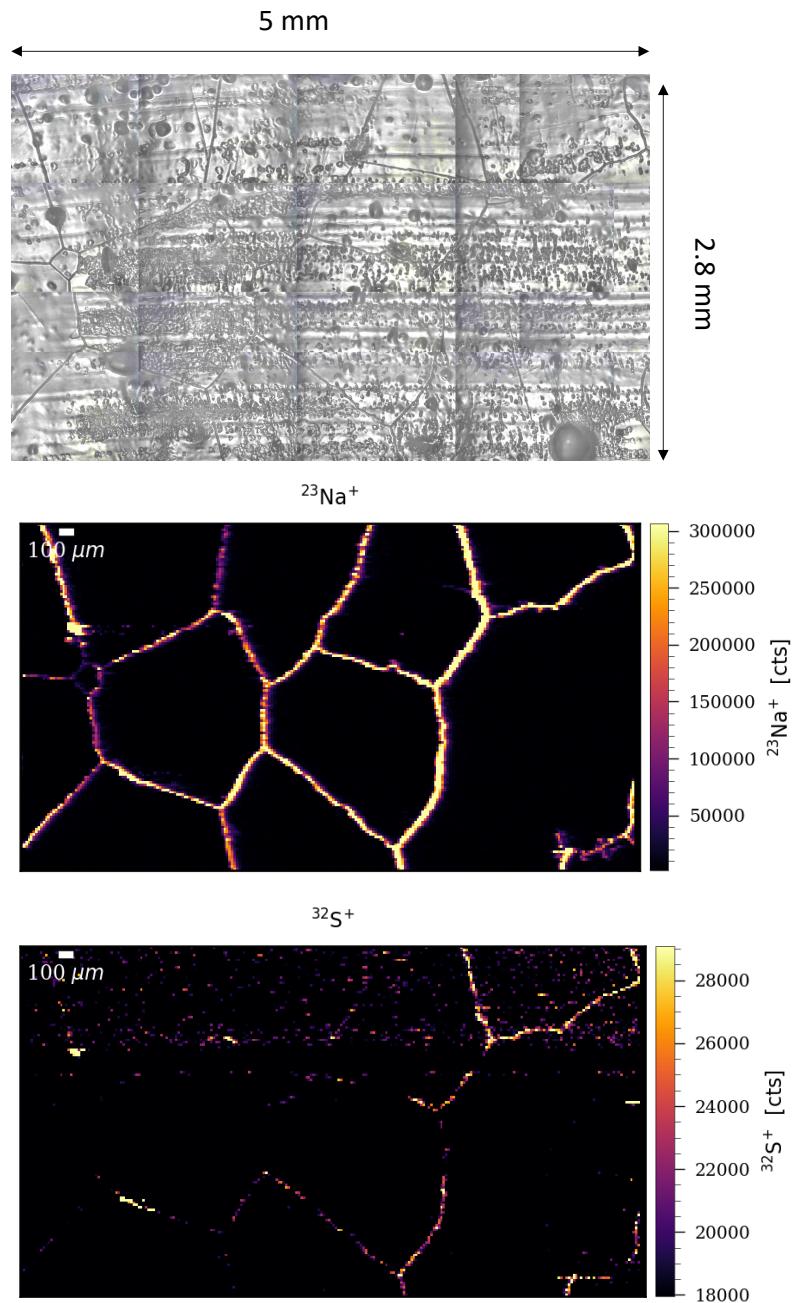
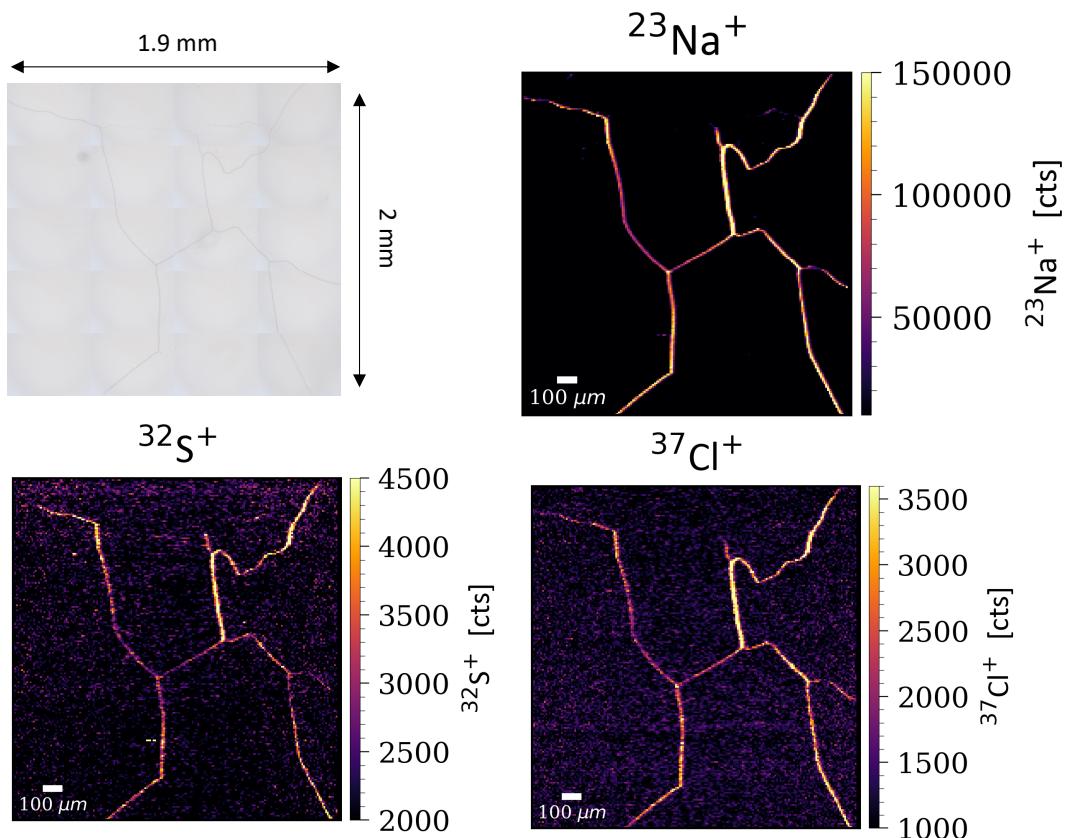


Figure S1: EDC1065 map for ^{23}Na and ^{32}S . Map size is 2.8 x 5 mm.



15 **Figure S2: EDC1819-3 map recorded after EDC513-1 shown in Figure 3.**

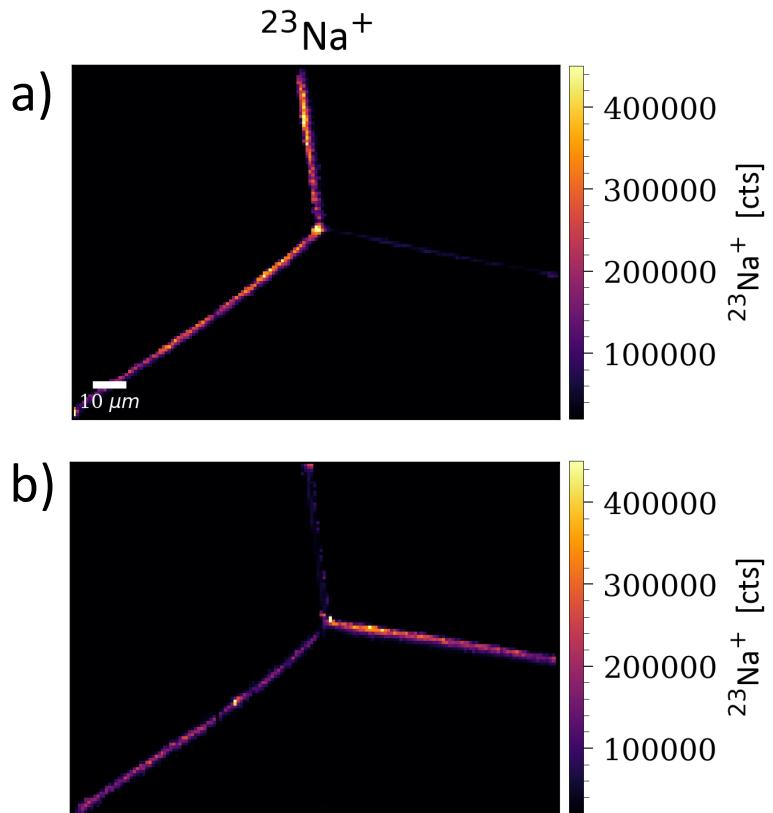
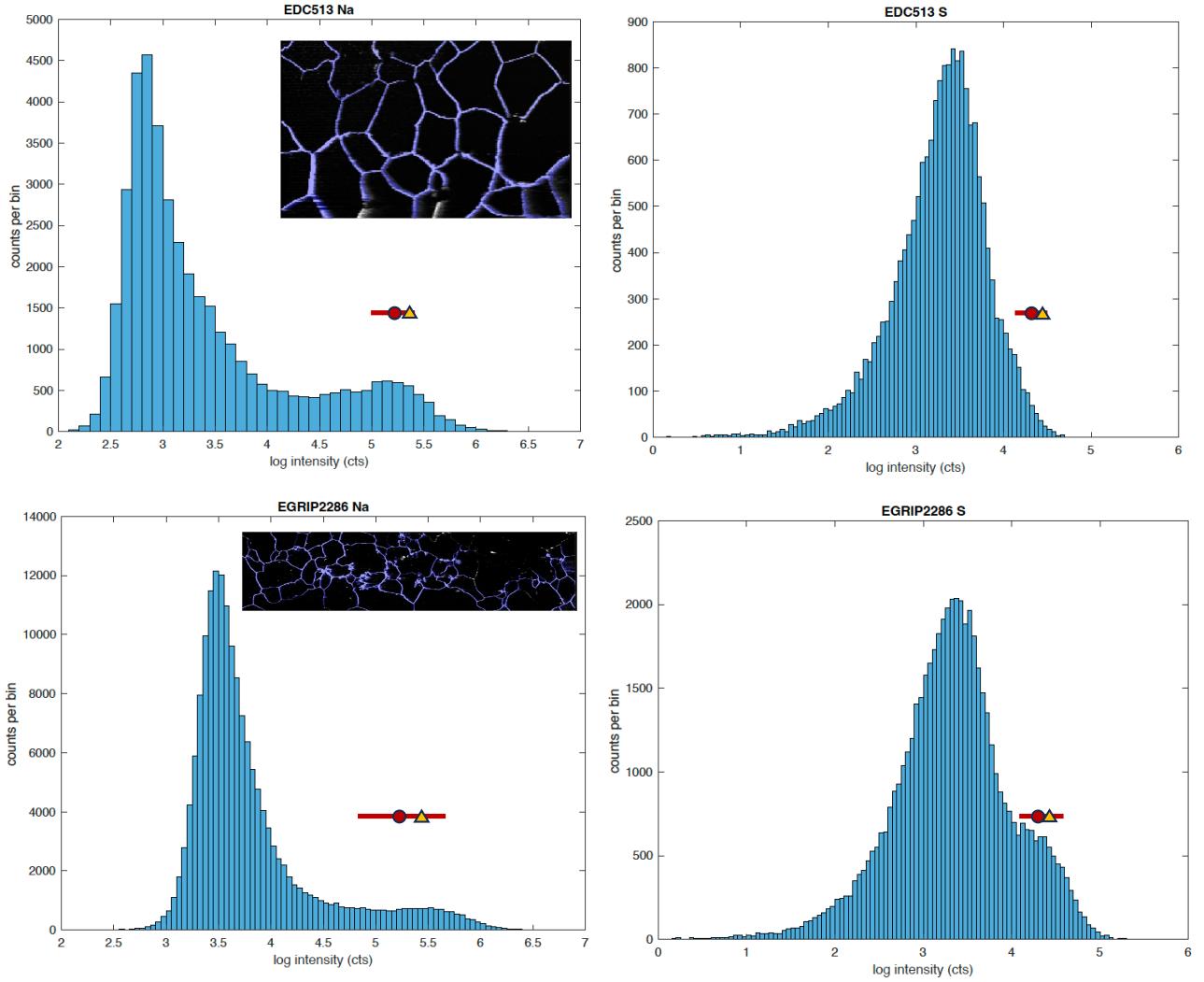


Figure S3: Mapping at $1\mu\text{m}$ spot size as in Figure 6. Shown in a) is the map for horizontal scan direction (left to right) and in b) for a subsequent map in vertical scan direction (up-down). Note the change in intensity for the grain boundary on the upper and right side, respectively.



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Figure S4: Intensity distributions shown as histograms for Na & S of Figure 1 and 2 in the main manuscript. Note the bimodal distribution, especially visible for Na, which correspond to high intensity foreground (e.g. grain boundaries) and low intensity background (grain interiors) of the image. The inserts in the Na histograms show the grain boundary segmentation. Red dots denote the median of the thereby segmented grain boundary pixels, the red line extends within the 25-75% interquartile range. Yellow triangles denote the median intensity of pixels at the triple junctions (segmented manually).

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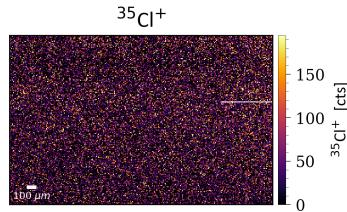


Figure 3

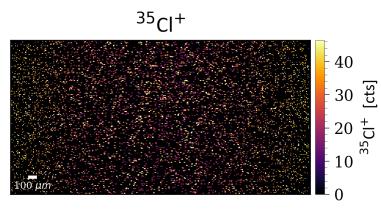


Figure 4

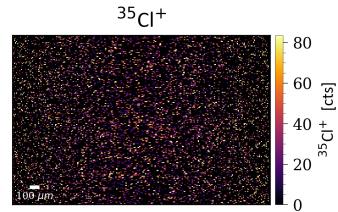


Figure 5

Figure S5: Examples of missing signals in ^{35}Cl channels for data shown in Figures 3,4,5 in the main text.