Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Channels of oxygen diffusion in single crystal rubrene revealed.

Supplementary material

S1.

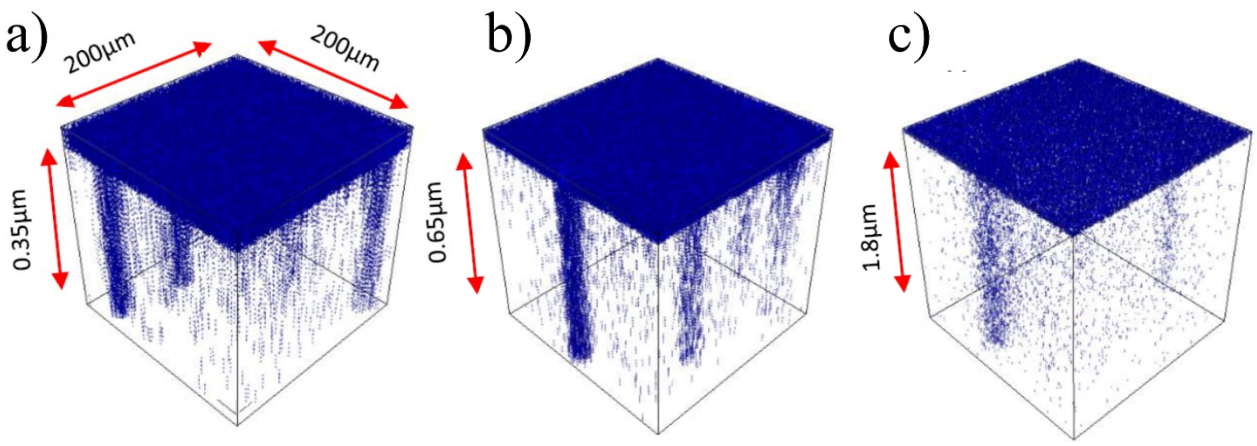

Figure S1: Shows a series of 3D ions maps in which the O^- ion has been tracked. All maps were recorded at different analysis areas of the same rubrene crystal. This preliminary data was undertaken on an 'as grown' rubrene crystal which had significant exposure to the ambient environment. Of note is the varying appearance of the oxygen channels. It can be seen in b) and c) that some of the channels appear to not run the entirety of the analysis depth and display a typical oxygen diffusion style profile.

S2.

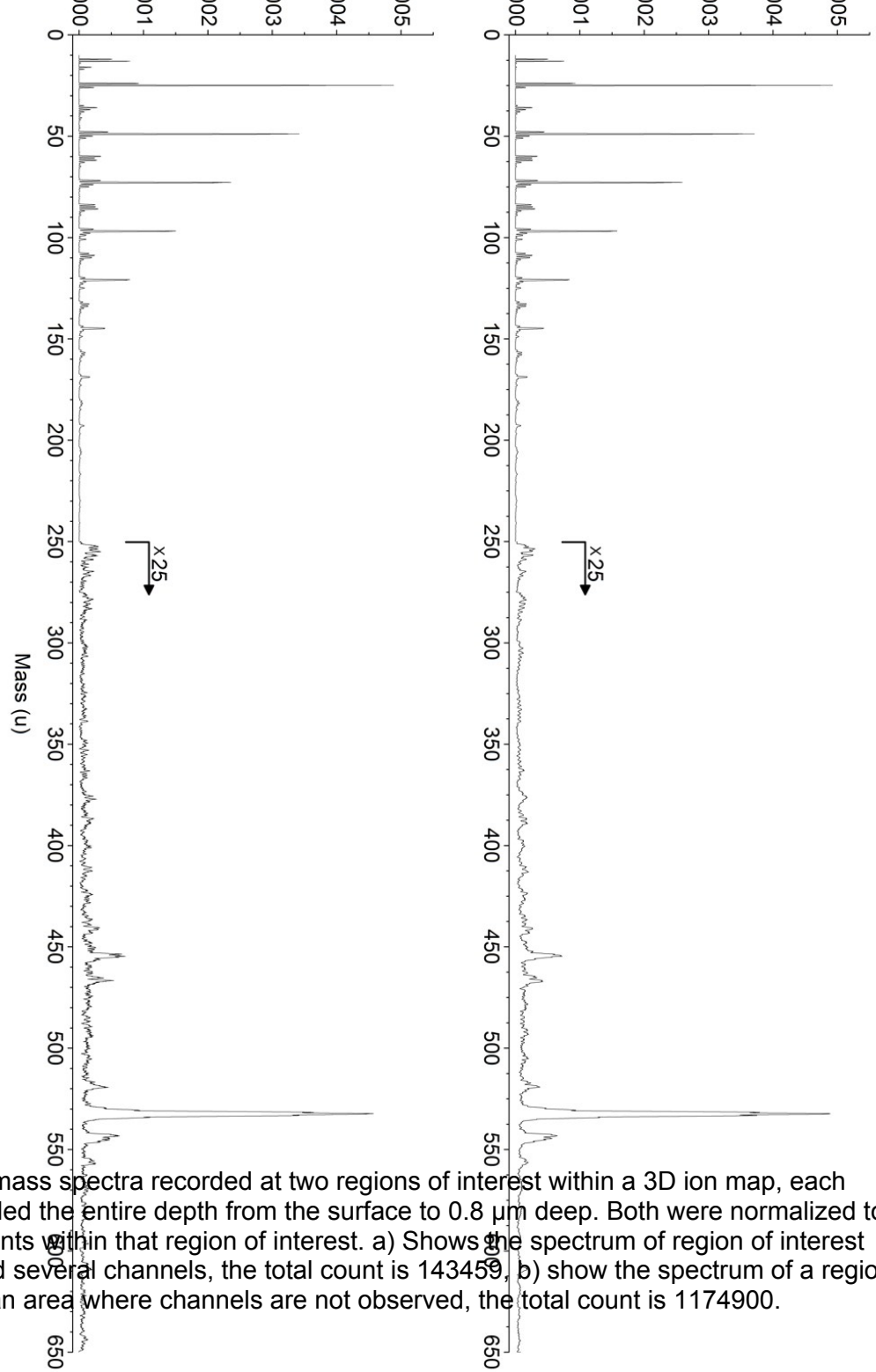

Figure S2: Shows the mass spectra recorded at two regions of interest within a 3D ion map, each region of interest included the entire depth from the surface to 0.8 µm deep. Both were normalized to the total number of counts within that region of interest. a) Shows the spectrum of region of interest closely selected around several channels, the total count is 143459, b) show the spectrum of a region of interest selected in an area where channels are not observed, the total count is 1174900.

S3.

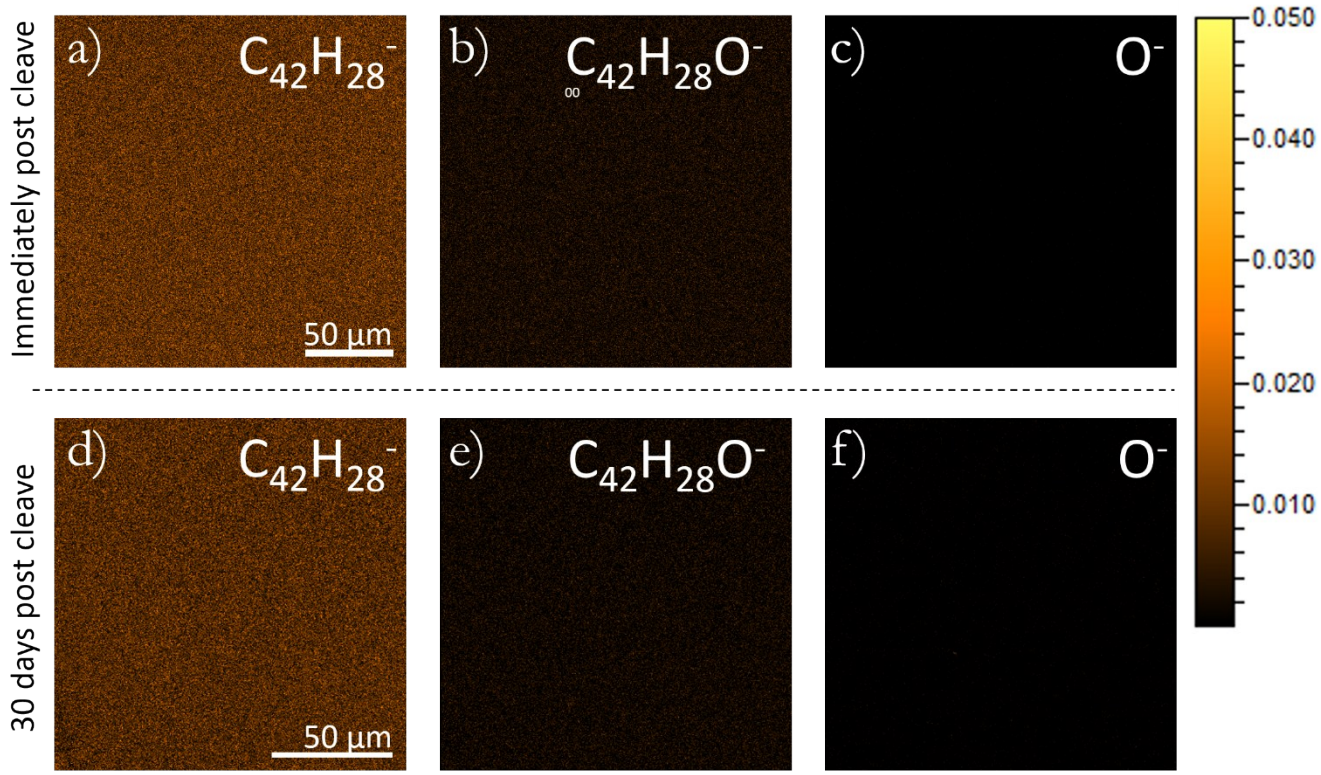

Figure S3: Shows 2 sets of 2D ion maps, a), b), and c) were recorded in the same location on a cleaved surface revealed from the bulk of the material immediately after cleaving along the a b plane of the crystal. d), e), and f) were recorded at a different analysis area of the same cleaved surface 30 days after cleaving with exposure to the ambient. Of note is the lack of observable channels in both instances. The O^- counts are just above experimental background in Figure c) slightly increase in Figure f).