

Accessory Publication

Secondary ion mass spectrometry of macromolecules loading in individual polyelectrolyte multilayer microcapsules

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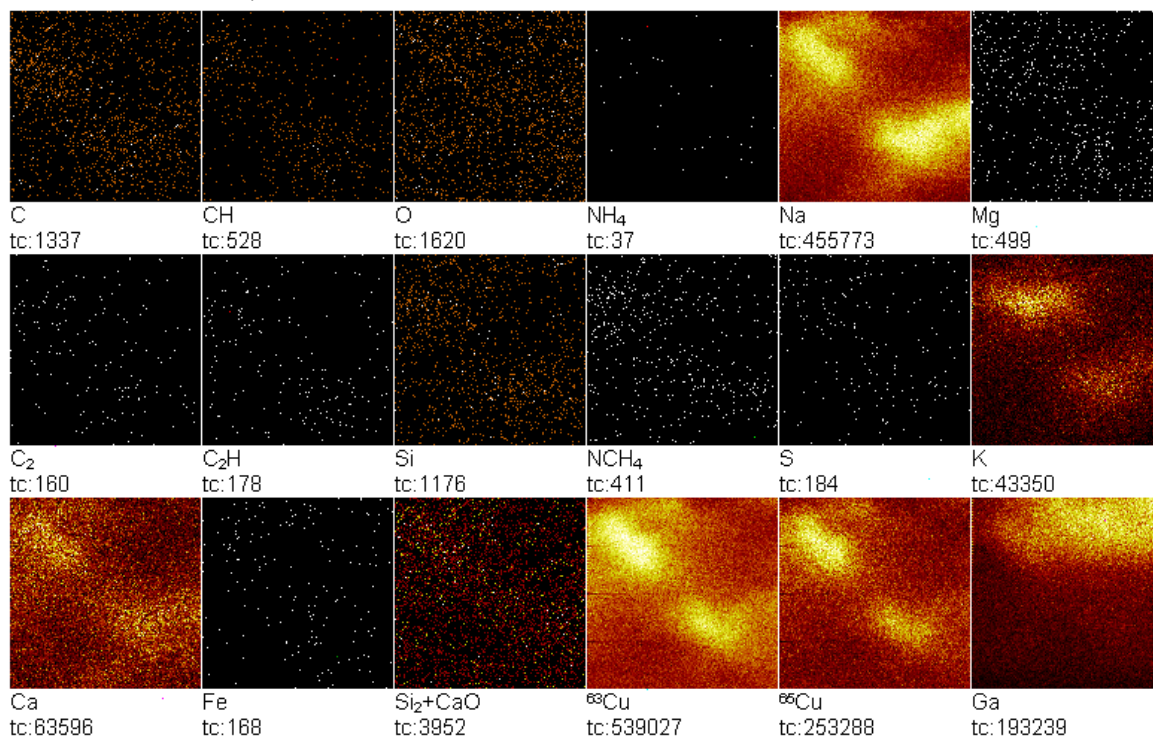
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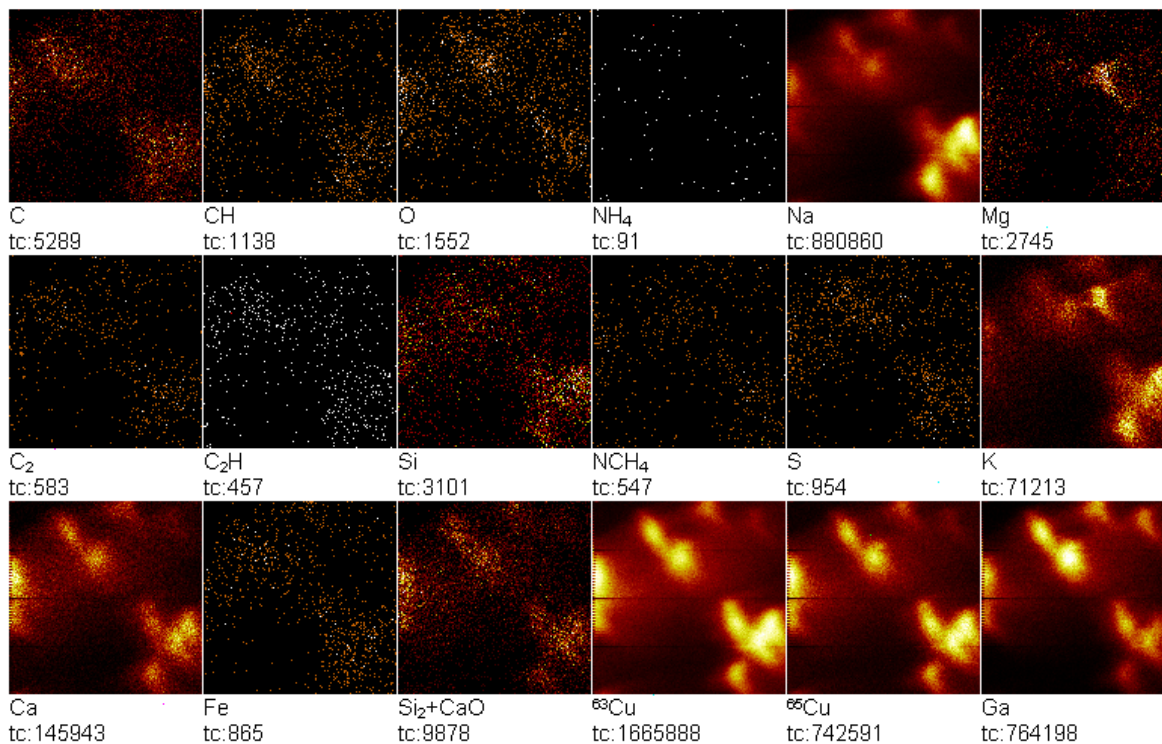
Figure AP1 (a) demonstrates typical mass resolved images (chemical maps) of positive ions emitting from the sample of capsules deposited onto copper substrate. One can see that most of ions are coming from the whole substrate due to surface contamination. Moreover just trace amounts of Fe ions were detected as enzyme is encapsulated inside PEM capsules and the emitted secondary ions originated from the uppermost one or two atomic layers. Images taken after the 5 min of 1 keV Ar⁺ ions sputtering are shown in the fig. AP1 (b). In this case emission of ions is concentrated in the areas occupied by PEM capsules having the rest of the substrate as black background. This is a good evidence of the complete removal of surface contamination. Simultaneously the Fe ions coming from encapsulated enzyme were detected indicating that PEM shell of capsules had been sputtered away and analysis of their internal content became available.

Field of view: 50.8 × 50.8 μm²



a

Field of view: 50.8 × 50.8 μm²



b

Fig. AP1. Mass resolved images (chemical maps) of positive ions from capsules loaded with enzyme by its absorption in porous CaCO₃, images were taken before (a) and after (b) applying the second beam of 1 keV Ar⁺ for 5 min.