

Supporting Material

Cost-efficient Sample Plates made from Weathering Steel for SALDI-MS

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Surface characterization.

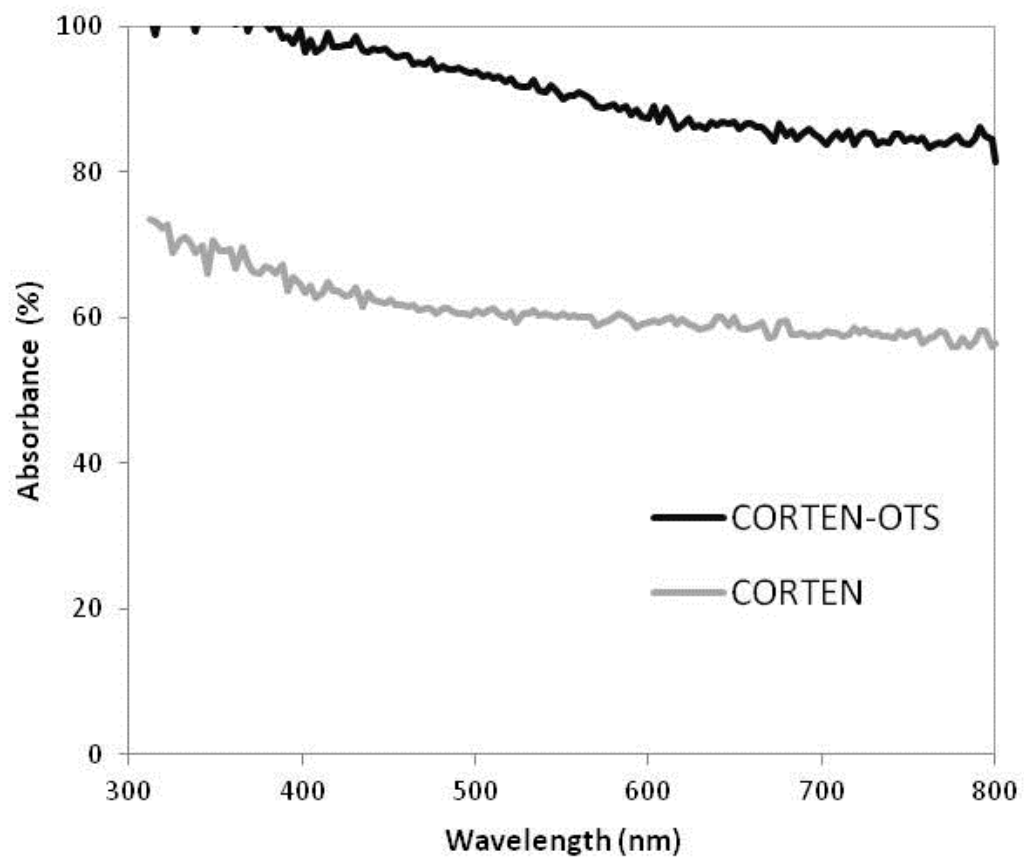


Figure S-1. Absorbance spectra of the polished and OTS-coated weathering steel plates.

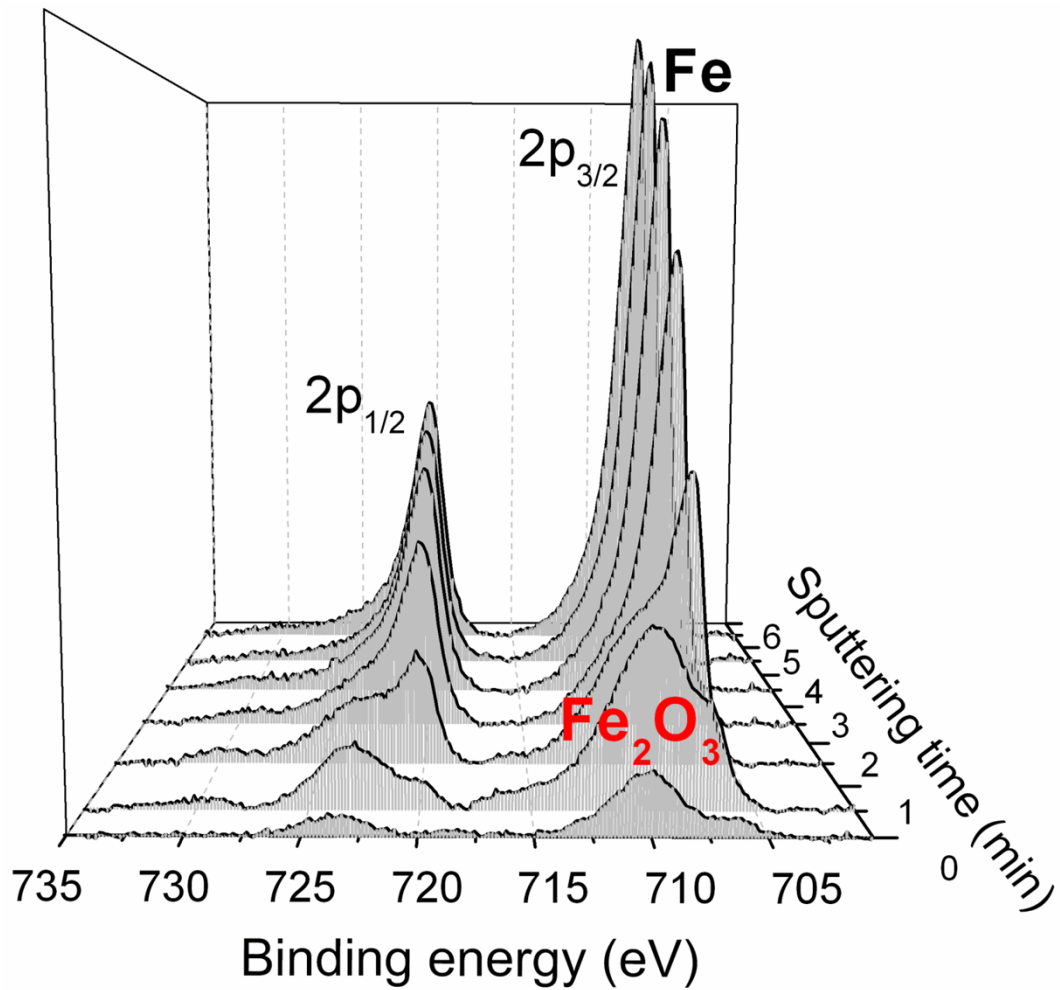


Figure S-2. Fe 2p spectra of the polished sample. In the Fe 2p spectra, two peaks are observed (doublet); $2p_{3/2}$ and $2p_{1/2}$. The measurement on the surface ($t = 0$ min) shows a spectrum with the presence of Fe_2O_3 and metallic Fe components, at around 710.4 eV and 707.2 eV, respectively, in the $2p_{3/2}$ peak. Sputtering the surface with argon ions remove the Fe_2O_3 layer created spontaneously on the Fe surface. After 4 min of sputtering, the Fe_2O_3 layer is completely removed and only metallic Fe is detected.

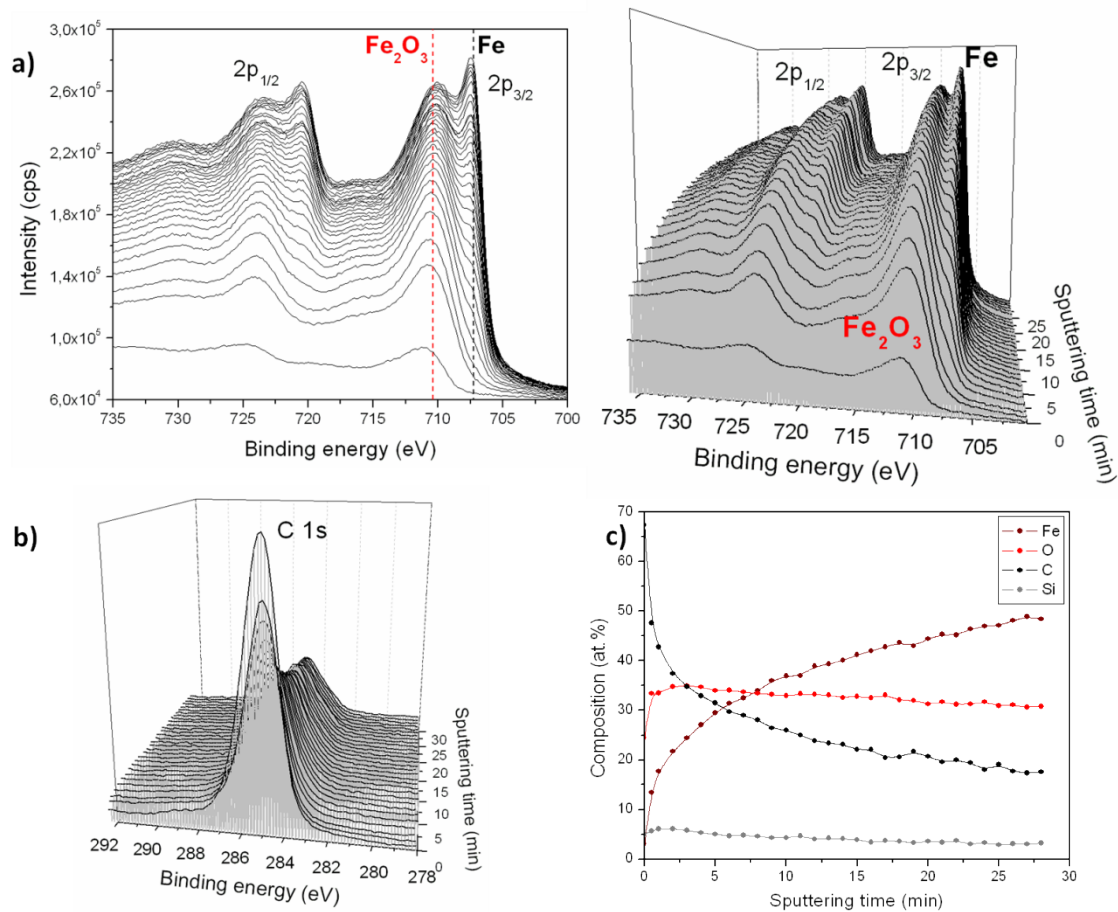
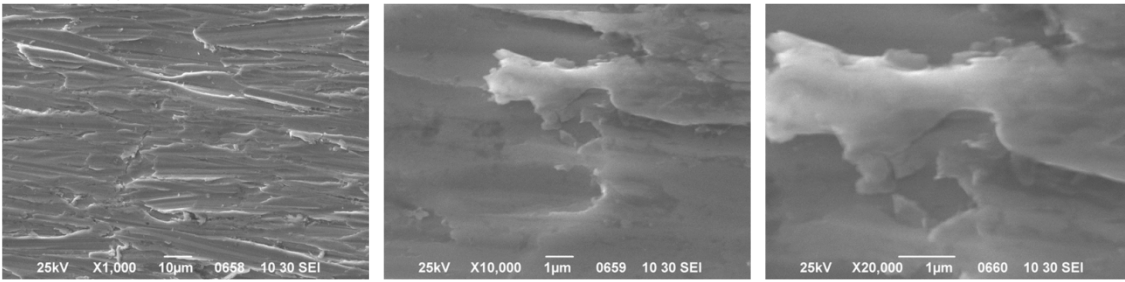


Figure S-3. a) Fe 2p spectra of the hydrophobic sample. Two peaks are observed (doublet); $2p_{3/2}$ and $2p_{1/2}$. All the spectra show the presence of only the Fe_2O_3 component. Even after sputtering the surface with argon ions during 28 min, the Fe_2O_3 layer is not removed. At higher sputtering times, a “shoulder” in the spectra assigned to metallic Fe appears and is due to reduction of the Fe_2O_3 to Fe by the argon ions. **b)** C 1s spectra of the hydrophobic sample at different sputtering times show the presence of the octadecyl-silane coating only at the surface. **c)** Composition ratios Fe/O/C/Si at different sputtering times.

COR-TEN plain



COR-TEN_OTShydrophobic

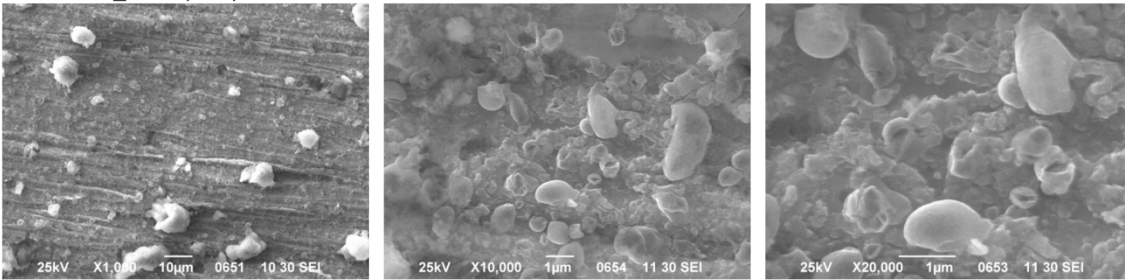


Figure S-4. SEM images of a polished weathering steel plate, before and after coating with OTS.

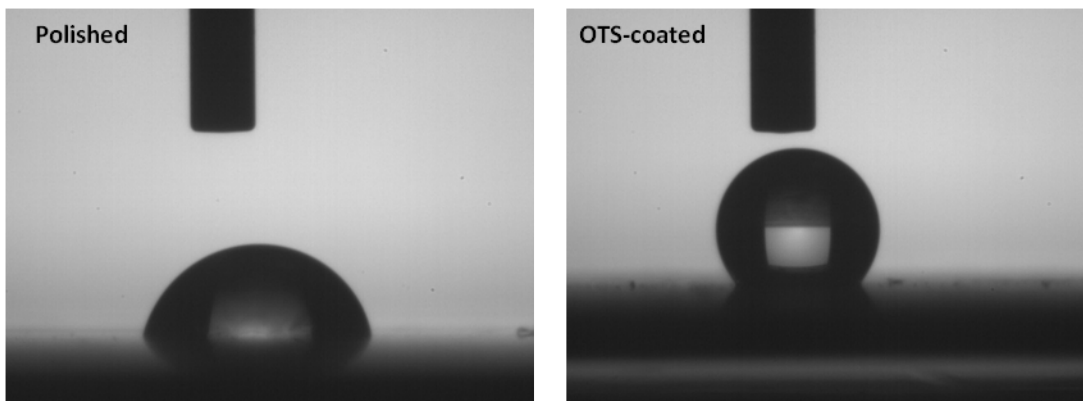


Figure S-5. Contact angle measurements on polished ($\theta = 65 \pm 1^\circ$) and OTS-coated weathering steel slides ($\theta = 128 \pm 1^\circ$).

LDI performance..

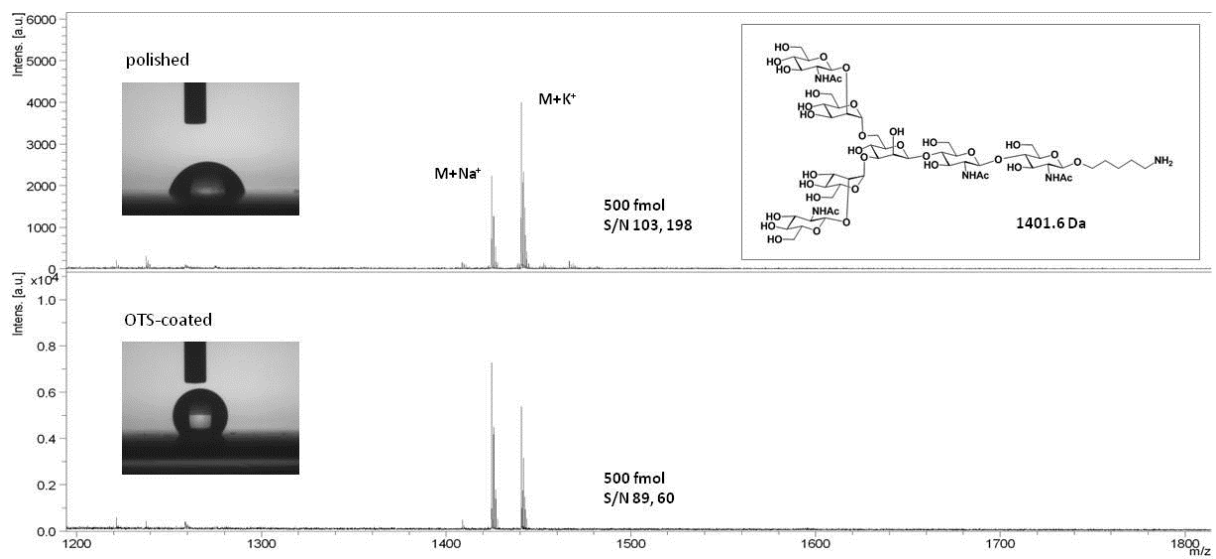


Figure S-6. SALDI spectra of biantennary glycan 1 (0.5 picomol) on polished weathering steel plate, and on OTS-coated weathering steel.

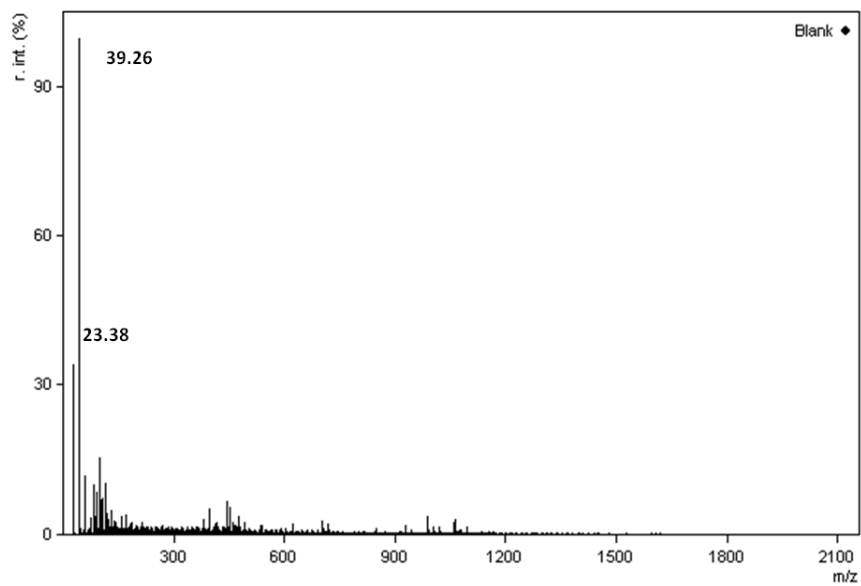


Figure S-7. Background ions on weathering steel

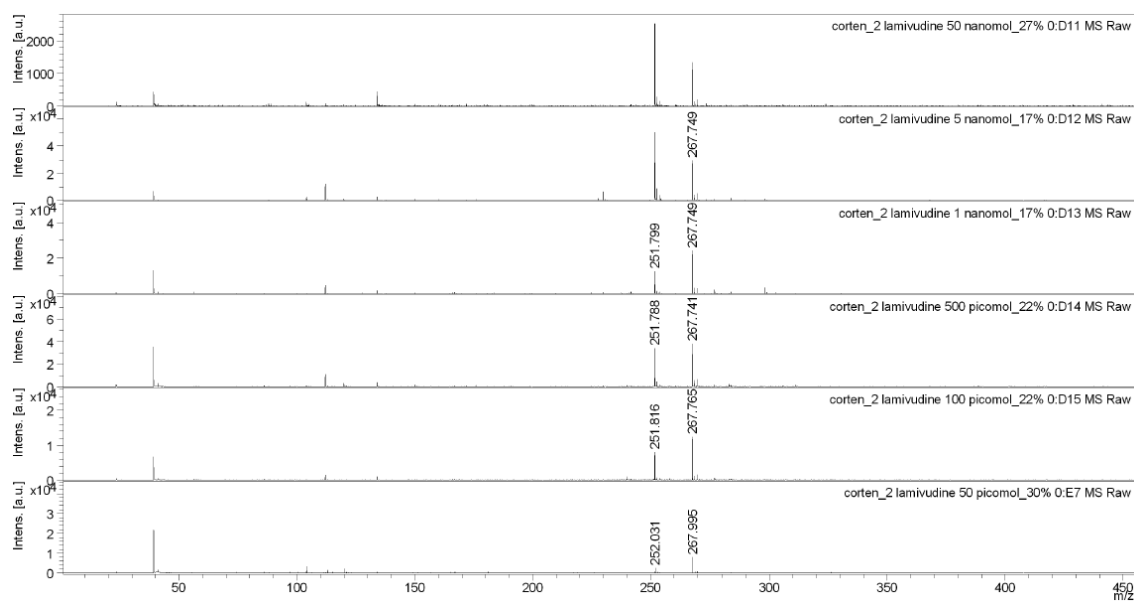


Figure S-8. Lamivudine detection by LDI on weathering steel.

Isotopic dilution experiment.

Three replicates of the sample were analysed by triplicate and the results obtained were averaged to give a lactose amount of 4.4 g/100 mL of milk with a coefficient of variation of 3.9 % which is in good agreement with the data given by the producers. The monoisotopic masses from the sodium adducts of both lactose and ¹³C-lactose ions were analysed, taking into account the abundance coefficients for each signal as expressed in the formula:

$$C = C^* \times \frac{X_n^*}{X_n} \times \frac{I_n}{I_n^*}$$

- C - total concentration of the sample
- C* - total concentration of the isotopically labeled standard
- X_n - relative abundance of the isotopologue in the sample
- X_n^{*} - relative abundance of the isotopologue in the isotopically labeled standard
- I_n - intensity of the isotopologue in the sample
- I_n^{*} - intensity of the isotopologue in the isotopically labeled standard

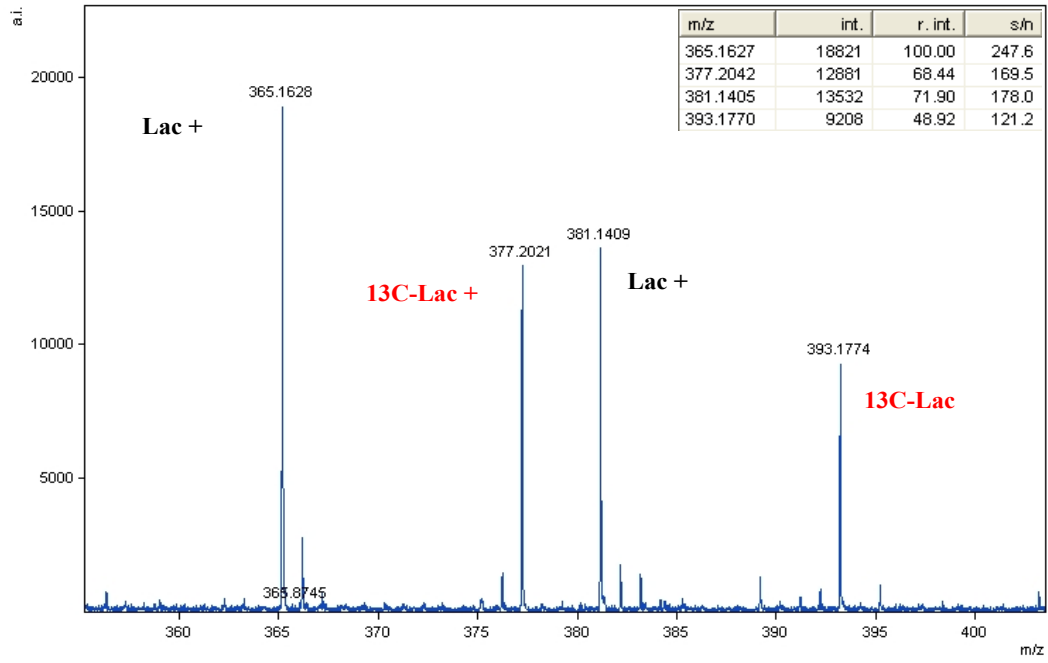


Figure S-9. Lactose quantification on milk.

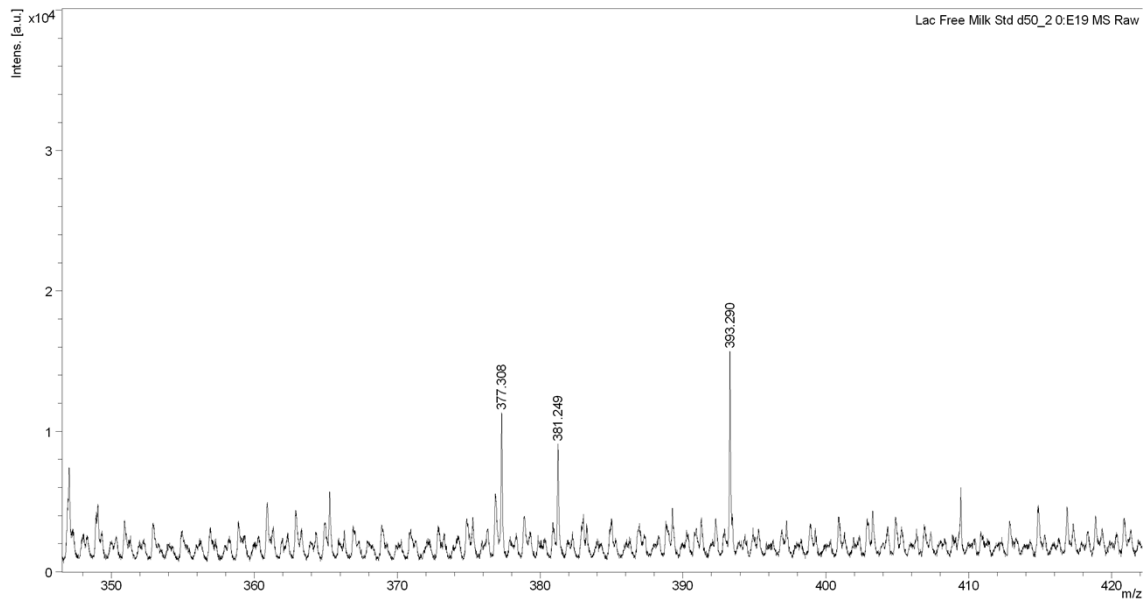


Figure S-10. Free-lactose milk was also analysed in the presence of the internal standard.

LDI-Tissue imaging

Tissue 4 μ m on CORTEN-polished

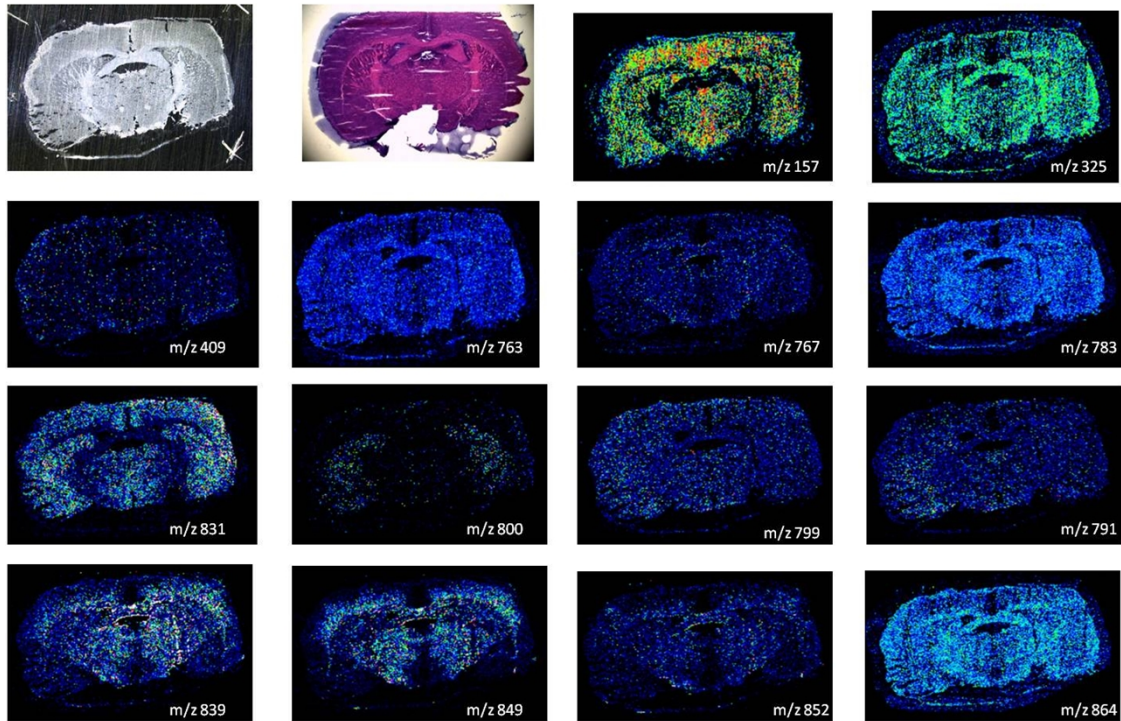


Figure S-11. Matrix-free LDI mass spectra collected from mouse brain tissue sections on a polished weathering steel slide. The tissue sections had not been processed after mounted in the target.

Tissue 4 μ m on CORTEN-OTS

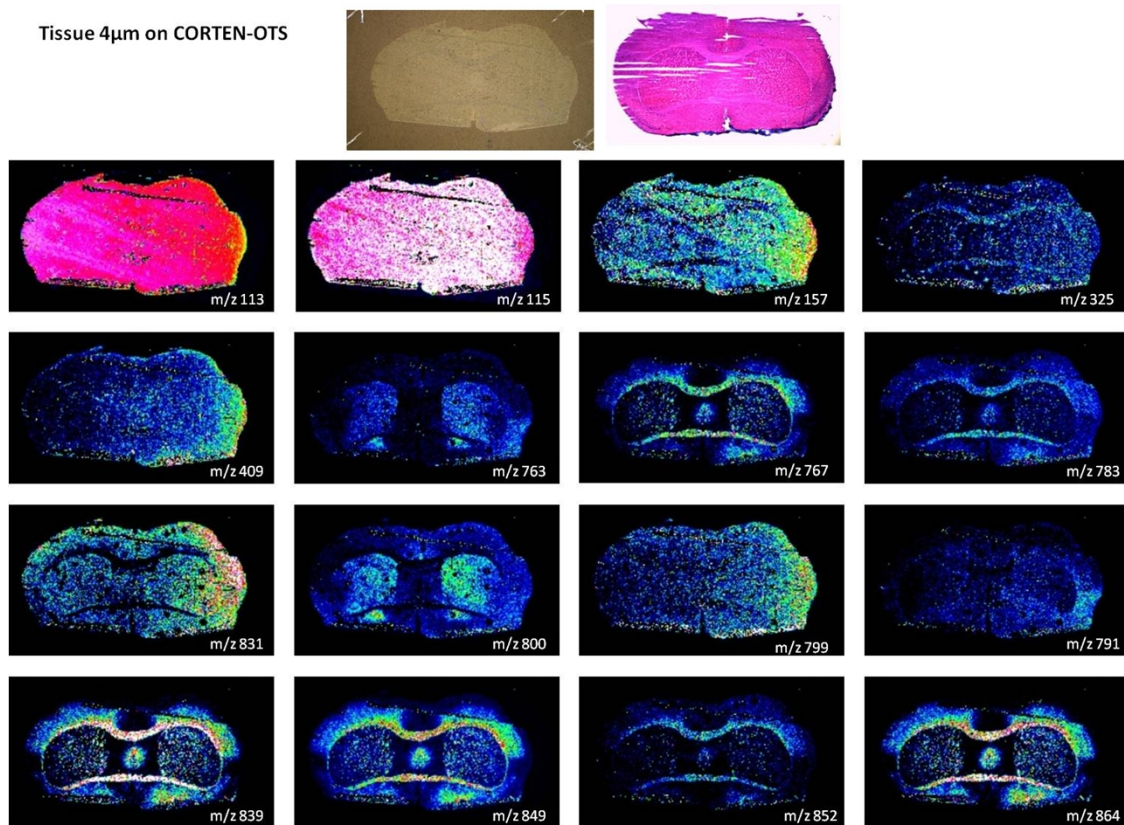


Figure S-12. Matrix-free LDI mass spectra collected from mouse brain tissue sections on a OTS coated weathering steel slide. The tissue sections had not been processed after mounted in the target.

Stamp CORTEN-OTS:

tissue removed in a stream of H₂O with a syringe and washed by immersion in H₂O

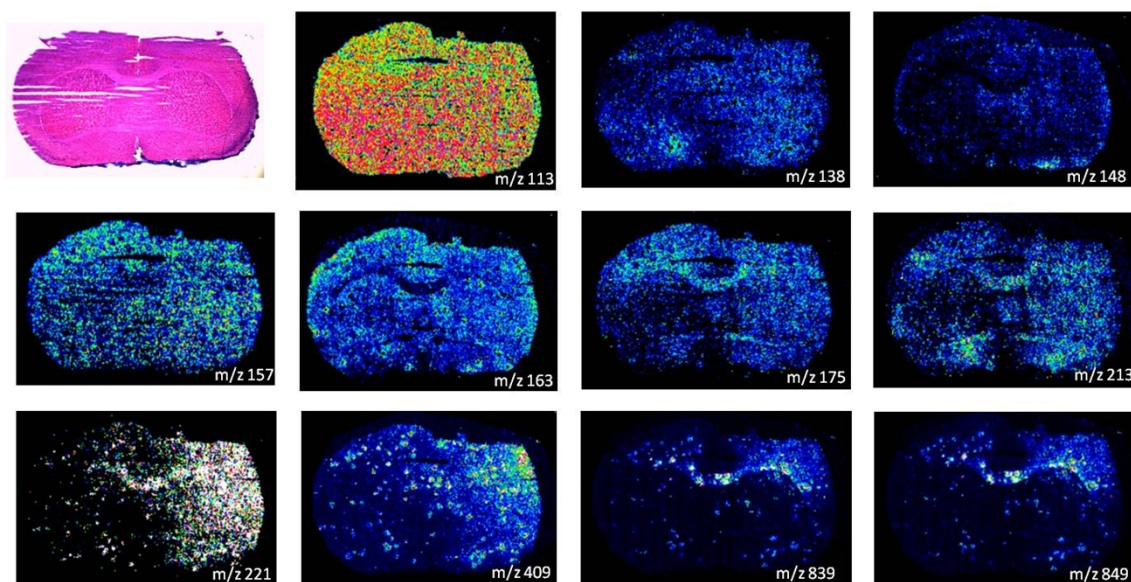


Figure S-13. Matrix-free LDI mass spectra collected after an aqueous washing of the brain tissue sections on a OTS coated weathering steel slide. The slide was dried with a stream of Ar after washing.