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 $\text{Fe}_2\text{O}_3$ 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 $\text{Fe}_2\text{O}_3$ layer created spontaneously on the Fe surface. After 4 min of sputtering, the $\text{Fe}_2\text{O}_3$ 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 Fe₂O₃ component. Even after sputtering the surface with argon ions during 28 min, the Fe₂O₃ 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 Fe₂O₃ 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.
**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 ($\theta = 128 \pm 1^\circ$).
**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
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 $^{13}$C-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.
**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.
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.