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Working

## Matrix Deposition using the SunChrom Sprayer

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Mass Spectrometry at MPI-Bremen

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### ABSTRACT

Depending on tissue and analytes that will be analysed different matrices can be used. The following 2 matrices are first steps to analyse lipids (SDHB) and peptides (CHCA). Matrix concentration and solvent ratio as well as instrument settings can be adjusted specifically to tissue and analytes.

SOP\_TransMIT\_sprayer  
\_JBE\_27102017.docx

### PROTOCOL STATUS

#### Working

We use this protocol in our group and it is working

- 1 Open the SunCollect Software V1.7.56.
- 2 Open the Nitrogen Flow to 2 bar.
- 3 Take the 1 ml syringe out of the syringe pump, fill it with cleaning solution and mount the syringe again to the syringe pump.
- 4 Select a flow of 20 µl/min at the syringe pump settings and start the flow. Check if droplets are coming out at the end of the spraying capillary. Stop the flow when at least 600 µl have gone through (≈30min). Avoid letting the pump go till the very end. The motor will not stop automatically and continues turning. This could damage the pump.
- 5 Weigh in the same type of slide (Superfrost, Poly-L-Lysine) that is used for the tissue section. This slide is used as a test slide for the matrix deposition.
- 6 Prepare the appropriate matrix.

- 7 Insert the test slide into the slide holder of the SunCollect Sprayer.
- 8 Open the Tissue Setup in the spraying program.
- 9 Load the appropriate method.
- 10 Go to Positioning in the method file to teach the slide. With this the area that will be sprayed is defined. The upper left and the lower right x,y position needs to be specified. The spraying capillary can be moved using the following combination: down – Ctrl and simultaneously arrow key down, right – Alt and simultaneously arrow key right, left – Alt and simultaneously arrow key left.
- 11 Move the spraying capillary to the x1, y1 position at the top left corner of the slide and press Insert coordinates.
- 12 Move the spraying capillary to the x2, y2 position at the bottom right corner of the slide and press Insert coordinates. To end the teaching press the Teaching button and click ok. The spray capillary automatically moves back to its home position.
- 13 Check if the Z – position in the method file is still the same as in the method name. If not change it.
- 14 Save the method.
- 15 Take the 1 ml syringe out of the syringe pump, fill it with matrix and mount the syringe again to the syringe pump.
- 16 Initialise dispenser after refill.
- 17 Start dispenser and check if droplets are coming out of the spraying capillary.
- 18 Start the method with pressing the play button. The test slide is sprayed with the parameters set in the method (flow rate, number of layer etc.).

When the spraying method has finished the flow will stop automatically and the spraying capillary moves to its home position.

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20 Weigh the sprayed slide and calculate the amount of matrix deposited. This indicates whether the instrument and the method provide reproducible results.

21 Insert the slide with the tissue section at the same position. Doing so the same teaching of the slide can be used.

22 Decide, whether the syringe needs to be refilled with matrix (and initialize dispenser in the method) or use up the matrix that is left in the syringe. The matrix must last till the last layer.

23 Start the dispenser and check if droplets are coming out of the spraying capillary.

24 Start the same method used for the test slide with pressing the play button. The sample slide is sprayed with the parameters set in the method (flow rate, number of layer etc.).

25 When the method has finished take out the sample slide and store it safely in a slidebox.

26 Take the 1 ml syringe out of the syringe pump. Discard the matrix that is left in the syringe unless another sample slide needs to be sprayed with matrix. Fill the syringe with cleaning solution and mount it again to the syringe pump. Proceed with step 4.

27 When the syringe pump is stopped leave the remaining cleaning solvent in the syringe and wait for another 2 min. The Nitrogen flow dries the spraying capillary. This avoids crystallization of matrix within and outside of the capillary.

28 Switch off the Nitrogen flow.

29 Close the Tissue Setup and the SunCollect program.

30 Leave the computer and instrument switched on.



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