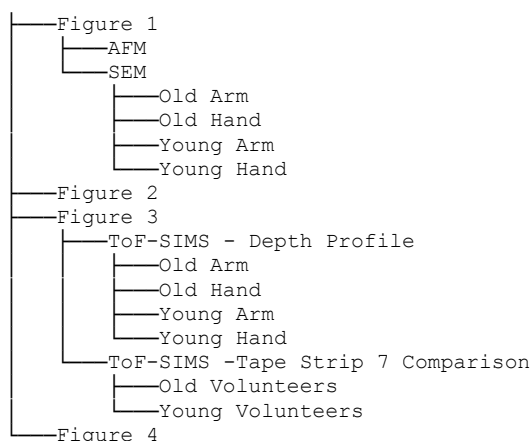


## Folder Structure



## Compilation of Readme Files

ReadMe - AFM Data.pdf

### AFM Data

This file contains the raw data collected from the AFM analysis. Samples were taken from one volunteer from each age category with each alternate tape strip (strips 2–14) analysed. Each data point is a step height value, which takes the maximum height measurement of the corneocyte layer above the substrate plane (nm). There are 9 repeat data points for each sample which is a result of three line profiles per sample and three images taken per line profile.

ReadMe - SEM Data.pdf

### SEM Data

This file contains the raw data collected from the SEM analysis. SEM images were collected from tape strip no. 6 for three volunteers from each age category. The files labelled Old Arm, Old Hand, Young Arm and Young Hand contain the respective SEM images collected for each sample type. At least two areas on each sample were imaged. All samples were imaged at  $\times 800$  magnification. The file labelled "SEM corneocyte surface area" contains the values for corneocyte surface area that were calculated using image analysis. The surface area of six different corneocyte cells per sample were calculated and values are presented in  $\mu\text{m}^2$ .

ReadMe - OPLSDA Files.pdf

### OPLSDA Files

This file contains the excel spreadsheets, containing ToF-SIMS raw data, that were inputted into the SIMCA-P programme for analysis. The automatic peak picking tool within the SurfaceLab 6 software was used and the data was exported as peak intensities. The ToF-SIMS data contained in the excel files has been processed as described in the methods section. The raw data was first thresholded using ions indicative of organic material (e.g., CN-) to remove data from the adhesive tape material observed between fissures in the striped skin. Following subtraction of the substrate data, the peak intensities were then normalised to the total ion count of

the spectra. The four excel files describe the four comparisons analysed in the SIMCA-P software: Old Arm vs. Hand, Young Arm vs. Young Hand, Old Arm vs. Young Arm and Old Hand vs. Young Hand.

ReadMe - ToF-SIMS data.pdf

## ToF-SIMS Data

This file contains the raw ToF-SIMS data exported as text files. For each sample the data was collected over a 4 mm × 4 mm area and then divided into 4 smaller 1 mm × 1 mm areas, this creates a repeat of 4 for each sample and the files contain the labels Roi 1, 2, 3, 4 accordingly.

The folder titled “Depth Profile” contains the data for one volunteer per age category, for alternate strips 1-15. Within this folder the data is subdivided into sample type: Old Arm, Old Hand, Young Arm and Young Hand.

The title of the text file contains the age category, the specific no. of the volunteer, the body site, the strip no., the polarity of the data (N= negative) and the repeat number. E.g. Old6\_Arm1\_N\_Roi 1

The folder titled “Tape Strip 7 Comparison” contains the data for all nine volunteers for tape strip no. 7. Within this folder the data is subdivided into age categories: Old Volunteers and Young Volunteers. The title of the text file contains the age category, the specific no. of the volunteer, the body site, the strip no., the polarity of the data (N= negative) and the repeat number. E.g. Old6\_Arm1\_N\_Roi 1

ReadMe - ToF-SIMS Images.pdf

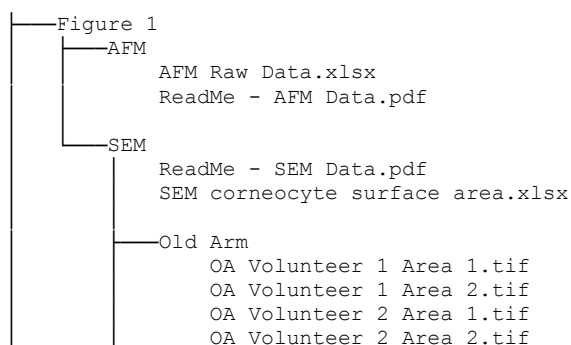
## ToF-SIMS Secondary Ion Images

This file contains ToF-SIMS secondary ion images exported into PDF documents. All images have been processed and scaled to match those presented in the paper. Each image is 4 mm × 4 mm, with the scale bar representing 1 mm and the images have been normalized to the total ion image.

The PDF files labelled “Old Volunteers” and “Young Volunteers” contain the images for all nine volunteers illustrating the distribution across tape strip no. 7 for three ions: CN<sup>-</sup> (generic tissue marker), C<sub>27</sub>H<sub>45</sub>SO<sub>4</sub><sup>-</sup> (cholesterol sulfate molecular ion) and C<sub>24</sub>H<sub>27</sub>O<sub>2</sub><sup>-</sup> (lignoceric acid). Examples for one volunteer per age group were shown in Figure 4(a).

The PDF file labelled “Depth Profile” contains the images for one volunteer per age group, illustrating the distribution across alternate strips 1-15 for three ions: CN<sup>-</sup> (generic tissue marker), C<sub>27</sub>H<sub>45</sub>SO<sub>4</sub><sup>-</sup> (cholesterol sulfate molecular ion) and C<sub>24</sub>H<sub>27</sub>O<sub>2</sub><sup>-</sup> (lignoceric acid). Examples showing the distribution for C<sub>27</sub>H<sub>45</sub>SO<sub>4</sub><sup>-</sup> (cholesterol sulfate molecular ion) for strips 1, 5, 9, 13 for the old volunteer were shown in Figure 4(b).

## Full Folder Structure



- OA Volunteer 2 Area 3.tif
- OA Volunteer 3 Area 1.tif
- OA Volunteer 3 Area 2.tif

- Old Hand

- OH Volunteer 1 Area 1.tif
- OH Volunteer 1 Area 2.tif
- OH Volunteer 2 Area 1.tif
- OH Volunteer 2 Area 2.tif
- OH Volunteer 3 Area 1.tif
- OH Volunteer 3 Area 2.tif

- Young Arm

- YA Volunteer 1 Area 1.tif
- YA Volunteer 1 Area 2.tif
- YA Volunteer 2 Area 1.tif
- YA Volunteer 2 Area 2.tif
- YA Volunteer 3 Area 1.tif
- YA Volunteer 3 Area 2.tif

- Young Hand

- YH Volunteer 1 Area 1.tif
- YH Volunteer 1 Area 2.tif
- YH Volunteer 2 Area 1.tif
- YH Volunteer 2 Area 2.tif
- YH Volunteer 3 Area 1.tif
- YH Volunteer 3 Area 2.tif

- Figure 2

- OPLSDA - Old Arm vs. Hand.xlsx
- OPLSDA - Young Arm vs. Hand.xlsx
- OPLSDA - Young Arm vs. Old Arm.xlsx
- OPLSDA - Young Hand vs. Old Hand.xlsx
- ReadMe - OPLSDA Files.pdf

- Figure 3

- ReadMe - ToF-SIMS data.pdf

- ToF-SIMS - Depth Profile

- Old Arm

- Old6\_Arm11\_N\_Roi 1.TXT
- Old6\_Arm11\_N\_Roi 2.TXT
- Old6\_Arm11\_N\_Roi 3.TXT
- Old6\_Arm11\_N\_Roi 4.TXT
- Old6\_Arm13\_N\_Roi 1.TXT
- Old6\_Arm13\_N\_Roi 2.TXT
- Old6\_Arm13\_N\_Roi 3.TXT
- Old6\_Arm13\_N\_Roi 4.TXT
- Old6\_Arm15\_N\_Roi 1.TXT
- Old6\_Arm15\_N\_Roi 2.TXT
- Old6\_Arm15\_N\_Roi 3.TXT
- Old6\_Arm15\_N\_Roi 4.TXT
- Old6\_Arm1\_N\_Roi 1.TXT
- Old6\_Arm1\_N\_Roi 2.TXT
- Old6\_Arm1\_N\_Roi 3.TXT
- Old6\_Arm1\_N\_Roi 4.TXT
- Old6\_Arm3\_N\_Roi 1.TXT
- Old6\_Arm3\_N\_Roi 2.TXT
- Old6\_Arm3\_N\_Roi 3.TXT
- Old6\_Arm3\_N\_Roi 4.TXT
- Old6\_Arm5\_N\_Roi 1.TXT
- Old6\_Arm5\_N\_Roi 2.TXT
- Old6\_Arm5\_N\_Roi 3.TXT
- Old6\_Arm5\_N\_Roi 4.TXT
- Old6\_Arm7\_N\_Roi 1.TXT
- Old6\_Arm7\_N\_Roi 2.TXT
- Old6\_Arm7\_N\_Roi 3.TXT
- Old6\_Arm7\_N\_Roi 4.TXT
- Old6\_Arm9\_N\_Roi 1.TXT
- Old6\_Arm9\_N\_Roi 2.TXT
- Old6\_Arm9\_N\_Roi 3.TXT
- Old6\_Arm9\_N\_Roi 4.TXT

- Old Hand

- Old6\_Hand11\_N\_Roi 1.TXT
- Old6\_Hand11\_N\_Roi 2.TXT
- Old6\_Hand11\_N\_Roi 3.TXT

Old6\_Hand11\_N\_Roi 4.TXT  
Old6\_Hand13\_N\_Roi 1.TXT  
Old6\_Hand13\_N\_Roi 2.TXT  
Old6\_Hand13\_N\_Roi 3.TXT  
Old6\_Hand13\_N\_Roi 4.TXT  
Old6\_Hand15\_N\_Roi 1.TXT  
Old6\_Hand15\_N\_Roi 2.TXT  
Old6\_Hand15\_N\_Roi 3.TXT  
Old6\_Hand15\_N\_Roi 4.TXT  
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Old6\_Hand1\_N\_Roi 3.TXT  
Old6\_Hand1\_N\_Roi 4.TXT  
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Old6\_Hand3\_N\_Roi 2.TXT  
Old6\_Hand3\_N\_Roi 3.TXT  
Old6\_Hand3\_N\_Roi 4.TXT  
Old6\_Hand5\_N\_Roi 1.TXT  
Old6\_Hand5\_N\_Roi 2.TXT  
Old6\_Hand5\_N\_Roi 3.TXT  
Old6\_Hand5\_N\_Roi 4.TXT  
Old6\_Hand7\_N\_Roi 1.TXT  
Old6\_Hand7\_N\_Roi 2.TXT  
Old6\_Hand7\_N\_Roi 3.TXT  
Old6\_Hand7\_N\_Roi 4.TXT  
Old6\_Hand9\_N\_Roi 1.TXT  
Old6\_Hand9\_N\_Roi 2.TXT  
Old6\_Hand9\_N\_Roi 3.TXT  
Old6\_Hand9\_N\_Roi 4.TXT

—Young Arm

Young5\_Arm11\_N\_Roi 1.TXT  
Young5\_Arm11\_N\_Roi 2.TXT  
Young5\_Arm11\_N\_Roi 3.TXT  
Young5\_Arm11\_N\_Roi 4.TXT  
Young5\_Arm13\_N\_Roi 1.TXT  
Young5\_Arm13\_N\_Roi 2.TXT  
Young5\_Arm13\_N\_Roi 3.TXT  
Young5\_Arm13\_N\_Roi 4.TXT  
Young5\_Arm15\_N\_Roi 1.TXT  
Young5\_Arm15\_N\_Roi 2.TXT  
Young5\_Arm15\_N\_Roi 3.TXT  
Young5\_Arm15\_N\_Roi 4.TXT  
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Young5\_Arm1\_N\_Roi 2.TXT  
Young5\_Arm1\_N\_Roi 3.TXT  
Young5\_Arm1\_N\_Roi 4.TXT  
Young5\_Arm3\_N\_Roi 1.TXT  
Young5\_Arm3\_N\_Roi 2.TXT  
Young5\_Arm3\_N\_Roi 3.TXT  
Young5\_Arm3\_N\_Roi 4.TXT  
Young5\_Arm5\_N\_Roi 1.TXT  
Young5\_Arm5\_N\_Roi 2.TXT  
Young5\_Arm5\_N\_Roi 3.TXT  
Young5\_Arm5\_N\_Roi 4.TXT  
Young5\_Arm7\_N\_Roi 1.TXT  
Young5\_Arm7\_N\_Roi 2.TXT  
Young5\_Arm7\_N\_Roi 3.TXT  
Young5\_Arm7\_N\_Roi 4.TXT  
Young5\_Arm9\_N\_Roi 1.TXT  
Young5\_Arm9\_N\_Roi 2.TXT  
Young5\_Arm9\_N\_Roi 3.TXT  
Young5\_Arm9\_N\_Roi 4.TXT

—Young Hand

Young5\_Hand11\_N\_Roi 1.TXT  
Young5\_Hand11\_N\_Roi 2.TXT  
Young5\_Hand11\_N\_Roi 3.TXT  
Young5\_Hand11\_N\_Roi 4.TXT  
Young5\_Hand13\_N\_Roi 1.TXT  
Young5\_Hand13\_N\_Roi 2.TXT  
Young5\_Hand13\_N\_Roi 3.TXT  
Young5\_Hand13\_N\_Roi 4.TXT  
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Young5\_Hand15\_N\_Roi 2.TXT  
Young5\_Hand15\_N\_Roi 3.TXT  
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Young5\_Hand1\_N\_Roi 3.TXT  
Young5\_Hand1\_N\_Roi 4.TXT  
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Young5\_Hand3\_N\_Roi 2.TXT  
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Young5\_Hand5\_N\_Roi 4.TXT  
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Young5\_Hand7\_N\_Roi 2.TXT  
Young5\_Hand7\_N\_Roi 3.TXT  
Young5\_Hand7\_N\_Roi 4.TXT  
Young5\_Hand9\_N\_Roi 1.TXT  
Young5\_Hand9\_N\_Roi 2.TXT  
Young5\_Hand9\_N\_Roi 3.TXT  
Young5\_Hand9\_N\_Roi 4.TXT

ToF-SIMS -Tape Strip 7 Comparison

Old Volunteers

Old1\_Arm7\_N\_Roi 1.TXT  
Old1\_Arm7\_N\_Roi 2.TXT  
Old1\_Arm7\_N\_Roi 3.TXT  
Old1\_Arm7\_N\_Roi 4.TXT  
Old1\_Hand7\_N\_Roi 1.TXT  
Old1\_Hand7\_N\_Roi 2.TXT  
Old1\_Hand7\_N\_Roi 3.TXT  
Old1\_Hand7\_N\_Roi 4.TXT  
Old2\_Arm7\_N\_Roi 1.TXT  
Old2\_Arm7\_N\_Roi 2.TXT  
Old2\_Arm7\_N\_Roi 3.TXT  
Old2\_Arm7\_N\_Roi 4.TXT  
Old2\_Hand7\_N\_Roi 1.TXT  
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Old2\_Hand7\_N\_Roi 4.TXT  
Old3\_Arm7\_N\_Roi 1.TXT  
Old3\_Arm7\_N\_Roi 2.TXT  
Old3\_Arm7\_N\_Roi 3.TXT  
Old3\_Arm7\_N\_Roi 4.TXT  
Old3\_Hand7\_N\_Roi 1.TXT  
Old3\_Hand7\_N\_Roi 2.TXT  
Old3\_Hand7\_N\_Roi 3.TXT  
Old3\_Hand7\_N\_Roi 4.TXT  
Old4\_Arm7\_N\_Roi 1.TXT  
Old4\_Arm7\_N\_Roi 2.TXT  
Old4\_Arm7\_N\_Roi 3.TXT  
Old4\_Arm7\_N\_Roi 4.TXT  
Old4\_Hand7\_N\_Roi 1.TXT  
Old4\_Hand7\_N\_Roi 2.TXT  
Old4\_Hand7\_N\_Roi 3.TXT  
Old4\_Hand7\_N\_Roi 4.TXT  
Old5\_Arm7\_N\_Roi 1.TXT  
Old5\_Arm7\_N\_Roi 2.TXT  
Old5\_Arm7\_N\_Roi 3.TXT  
Old5\_Arm7\_N\_Roi 4.TXT  
Old5\_Hand7\_N\_Roi 1.TXT  
Old5\_Hand7\_N\_Roi 2.TXT  
Old5\_Hand7\_N\_Roi 3.TXT  
Old5\_Hand7\_N\_Roi 4.TXT  
Old6\_Arm7\_N\_Roi 1.TXT  
Old6\_Arm7\_N\_Roi 2.TXT  
Old6\_Arm7\_N\_Roi 3.TXT  
Old6\_Arm7\_N\_Roi 4.TXT  
Old6\_Hand7\_N\_Roi 1.TXT  
Old6\_Hand7\_N\_Roi 2.TXT  
Old6\_Hand7\_N\_Roi 3.TXT  
Old6\_Hand7\_N\_Roi 4.TXT  
Old7\_Arm7\_N\_Roi 1.TXT  
Old7\_Arm7\_N\_Roi 2.TXT  
Old7\_Arm7\_N\_Roi 3.TXT  
Old7\_Arm7\_N\_Roi 4.TXT  
Old7\_Hand7\_N\_Roi 1.TXT  
Old7\_Hand7\_N\_Roi 2.TXT

Old7\_Hand7\_N\_Roi 3.TXT  
Old7\_Hand7\_N\_Roi 4.TXT  
Old8\_Arm7\_N\_Roi 1.TXT  
Old8\_Arm7\_N\_Roi 2.TXT  
Old8\_Arm7\_N\_Roi 3.TXT  
Old8\_Arm7\_N\_Roi 4.TXT  
Old8\_Hand7\_N\_Roi 1.TXT  
Old8\_Hand7\_N\_Roi 2.TXT  
Old8\_Hand7\_N\_Roi 3.TXT  
Old8\_Hand7\_N\_Roi 4.TXT  
Old9\_Arm7\_N\_Roi 1.TXT  
Old9\_Arm7\_N\_Roi 2.TXT  
Old9\_Arm7\_N\_Roi 3.TXT  
Old9\_Arm7\_N\_Roi 4.TXT  
Old9\_Hand7\_N\_Roi 1.TXT  
Old9\_Hand7\_N\_Roi 2.TXT  
Old9\_Hand7\_N\_Roi 3.TXT  
Old9\_Hand7\_N\_Roi 4.TXT

—Young Volunteers

Young1\_Arm7\_N\_Roi 1.TXT  
Young1\_Arm7\_N\_Roi 2.TXT  
Young1\_Arm7\_N\_Roi 3.TXT  
Young1\_Arm7\_N\_Roi 4.TXT  
Young1\_Hand7\_N\_Roi 1.TXT  
Young1\_Hand7\_N\_Roi 2.TXT  
Young1\_Hand7\_N\_Roi 3.TXT  
Young1\_Hand7\_N\_Roi 4.TXT  
Young2\_Arm7\_N\_Roi 1.TXT  
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Young2\_Hand7\_N\_Roi 3.TXT  
Young2\_Hand7\_N\_Roi 4.TXT  
Young3\_Arm7\_N\_Roi 1.TXT  
Young3\_Arm7\_N\_Roi 2.TXT  
Young3\_Arm7\_N\_Roi 3.TXT  
Young3\_Arm7\_N\_Roi 4.TXT  
Young3\_Hand7\_N\_Roi 1.TXT  
Young3\_Hand7\_N\_Roi 2.TXT  
Young3\_Hand7\_N\_Roi 3.TXT  
Young3\_Hand7\_N\_Roi 4.TXT  
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Young4\_Arm7\_N\_Roi 3.TXT  
Young4\_Arm7\_N\_Roi 4.TXT  
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Young4\_Hand7\_N\_Roi 2.TXT  
Young4\_Hand7\_N\_Roi 3.TXT  
Young4\_Hand7\_N\_Roi 4.TXT  
Young5\_Arm7\_N\_Roi 1.TXT  
Young5\_Arm7\_N\_Roi 2.TXT  
Young5\_Arm7\_N\_Roi 3.TXT  
Young5\_Arm7\_N\_Roi 4.TXT  
Young5\_Hand7\_N\_Roi 1.TXT  
Young5\_Hand7\_N\_Roi 2.TXT  
Young5\_Hand7\_N\_Roi 3.TXT  
Young5\_Hand7\_N\_Roi 4.TXT  
Young6\_Arm7\_N\_Roi 1.TXT  
Young6\_Arm7\_N\_Roi 2.TXT  
Young6\_Arm7\_N\_Roi 3.TXT  
Young6\_Arm7\_N\_Roi 4.TXT  
Young6\_Hand7\_N\_Roi 1.TXT  
Young6\_Hand7\_N\_Roi 2.TXT  
Young6\_Hand7\_N\_Roi 3.TXT  
Young6\_Hand7\_N\_Roi 4.TXT  
Young7\_Arm7\_N\_Roi 1.TXT  
Young7\_Arm7\_N\_Roi 2.TXT  
Young7\_Arm7\_N\_Roi 3.TXT  
Young7\_Arm7\_N\_Roi 4.TXT  
Young7\_Hand7\_N\_Roi 1.TXT  
Young7\_Hand7\_N\_Roi 2.TXT  
Young7\_Hand7\_N\_Roi 3.TXT  
Young7\_Hand7\_N\_Roi 4.TXT  
Young8\_Arm7\_N\_Roi 1.TXT

Young8\_Arm7\_N\_Roi 2.TXT  
Young8\_Arm7\_N\_Roi 3.TXT  
Young8\_Arm7\_N\_Roi 4.TXT  
Young8\_Hand7\_N\_Roi 1.TXT  
Young8\_Hand7\_N\_Roi 2.TXT  
Young8\_Hand7\_N\_Roi 3.TXT  
Young8\_Hand7\_N\_Roi 4.TXT  
Young9\_Arm7\_N\_Roi 1.TXT  
Young9\_Arm7\_N\_Roi 2.TXT  
Young9\_Arm7\_N\_Roi 3.TXT  
Young9\_Arm7\_N\_Roi 4.TXT  
Young9\_Hand7\_N\_Roi 1.TXT  
Young9\_Hand7\_N\_Roi 2.TXT  
Young9\_Hand7\_N\_Roi 3.TXT  
Young9\_Hand7\_N\_Roi 4.TXT

Figure 4

ReadMe - ToF-SIMS Images.pdf

ToF-SIMS Images - Depth Profile - Figure 4(b).pdf

ToF-SIMS Images - Old Volunteers - Figure 4(a).pdf

ToF-SIMS Images - Young Volunteers - Figure 4(a).pdf