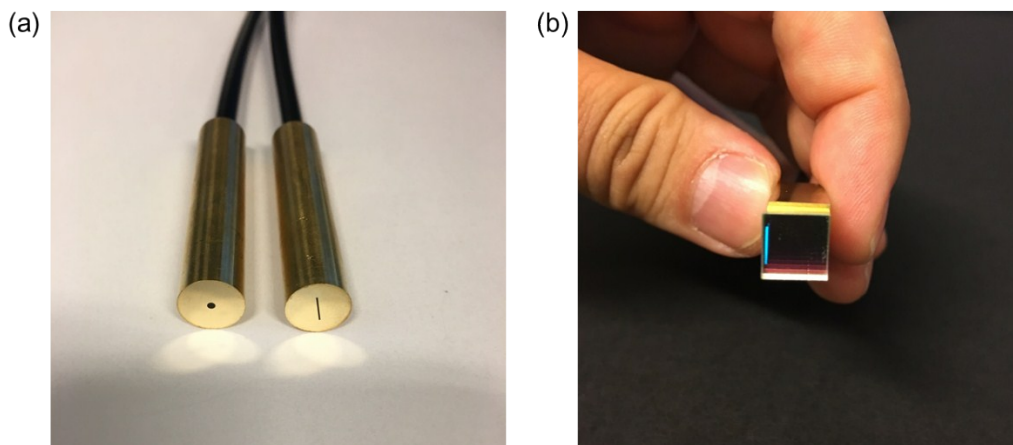


Supporting information

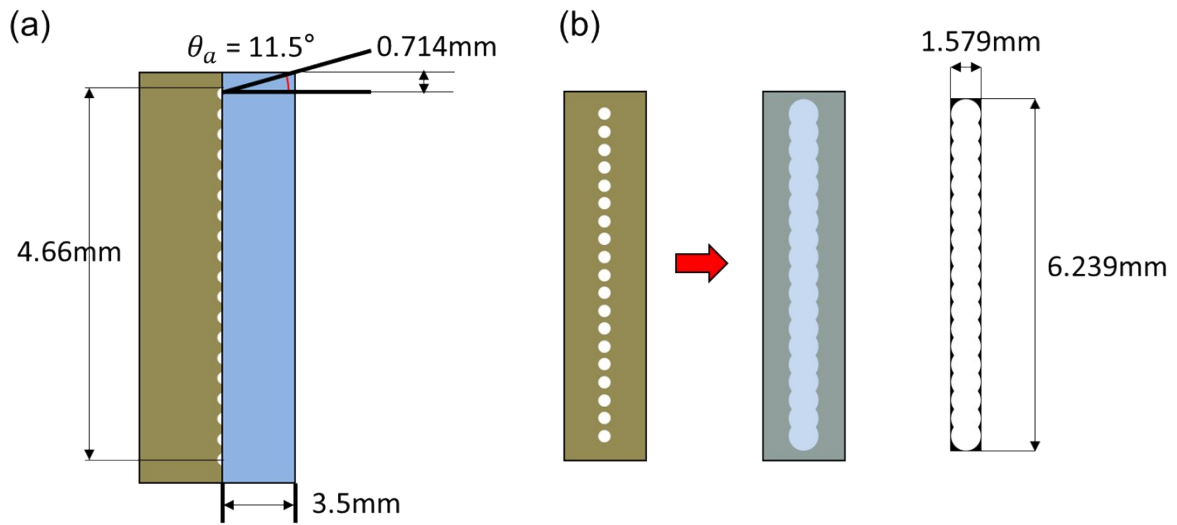
Figure S1. The photograph of optical fibre probes.



S 1. (a) The photograph of laser and detection side. Each probe includes the bundles of 19 fibers of 200 μm core (NA= 0.22). The diameter of cylindrical ferrules are 10 mm and the diameter of active area on laser side is 1.54 mm. (b) Excitation & collection side covered with optical filters. and the size of rectangular ferrule is 11 mm $\times$ 10 mm. The dimension of linear fiber array on detection is 4.66 mm (H) $\times$ 0.245 mm (W).

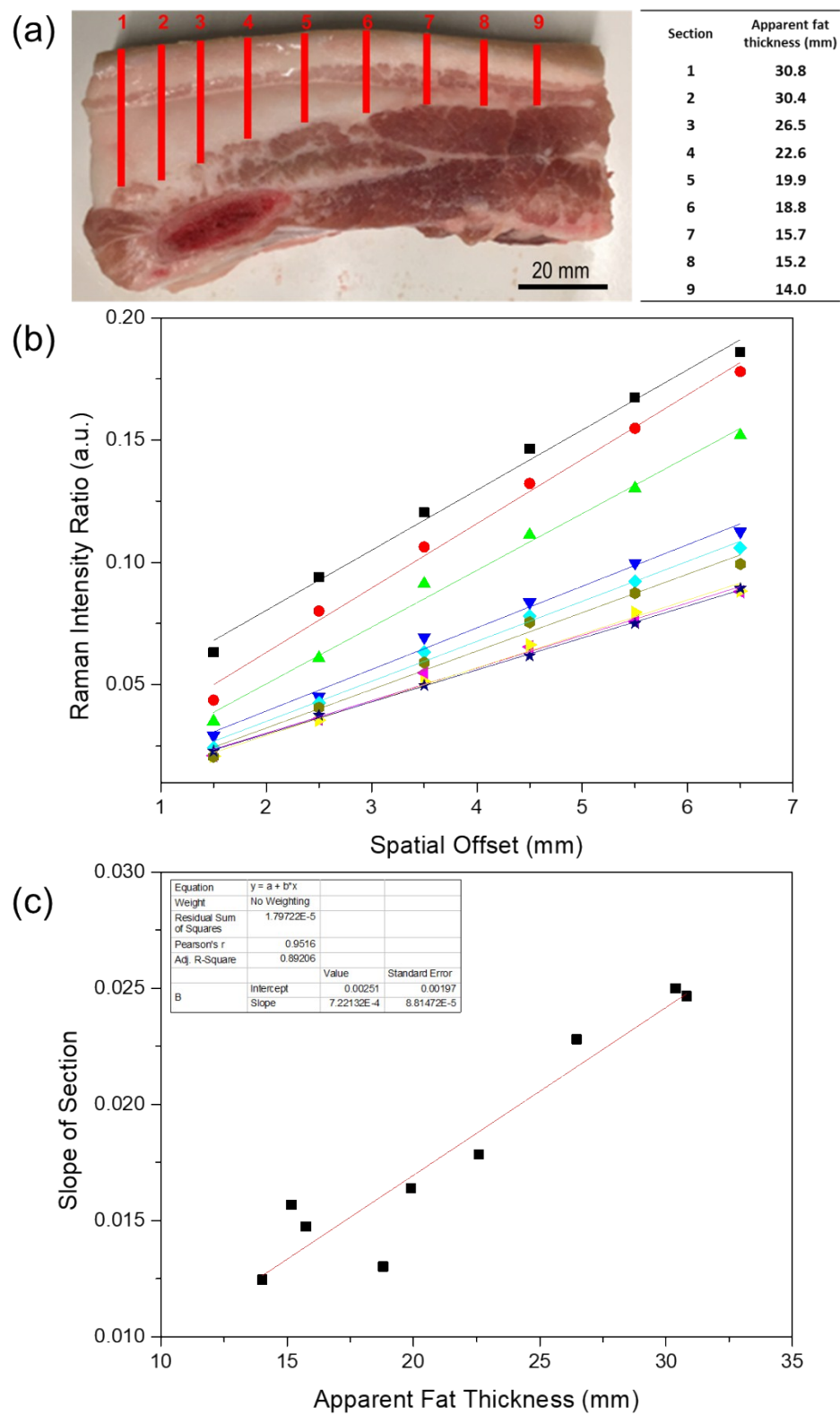
Figure S2. The calculation of laser power density.

By IEC 60825, the damage threshold of 830 nm laser for human skin is $2.6348 \times 10^4 \text{ J/m}^2$. And the detailed specifications of the fiber we used are as follows. The length of the fiber array is $\sim 4.66 \text{ mm}$, the core size is $200 \mu\text{m}$, and the NA value is 0.22. As shown in figure 1, the laser line filter is attached on the rectangular ferrule. And the shape when viewed from the side is as follows figure. The illumination area of the incident laser passing through the filter can be calculated: 1.579 mm in width and 6.239 mm in length. Therefore, the power density of light is $2.030 \times 10^3 \text{ J/m}^2$.



S 2. (a) Fiber array and detailed length as viewed from the side. (b) Fiber array viewed from the front and enlarged illumination area of the incident laser passing through the filter.

Figure S3. The Prediction of pork thickness with respect to the slope of Raman intensity ratio.



S 3. (a) The apparent fat thickness defined as the surface thickness in the photograph calibrated with the scale bar. (b) Linear relationship between spatial offset and slope ranging from 1.5 ~ 6.5 mm offset. (c) The plot of the the slope of each section as a function of the apparent thickness of the pork chunk.