**Supplement 2** A 7-step flowchart of implementation for acquisition of tears Raman spectra

1. **Power on**
   - Open central control computer system, selected emitting laser, illumination and motorized stage of confocal microscopy.

2. **Open software**
   - Open OMNIC® for Dispersive Raman.

3. **Raman shift calibration**
   - After laser warm-up, perform internal calibration of instrument and external registration by silicon wafer at Raman shift 520 cm\(^{-1}\).

4. **Set experimental conditions**
   - Set background exposure time, sample exposure time, collection time and accumulation times, collecting range of Raman shifts, etc.

5. **Set spectral post-processing algorithm**
   - Correct the background noise by subtracting pre-collected background signal during warm-up.
   - Correct autofluorescence by 3\(^{rd}\) order polynomial of each spectrum.

6. **Collect pre-normalized spectrum and correct its noise for each sampling**
   - Load dried teardrops – Ti/Au slide. Collect a spectrum, remove the spectrum with a low S/N ratio or interfered by a cosmic ray, and correct noise by subtracting root mean square of 1800–2000 cm\(^{-1}\).

7. **Normalize spectrum for each sampling**
   - Find maximal peak of 1000–1004 cm\(^{-1}\) of a spectrum. After minus mean spectral intensity from 700–1799 cm\(^{-1}\), and divided by peak intensity, a normalized spectrum was acquired.