

Supporting material

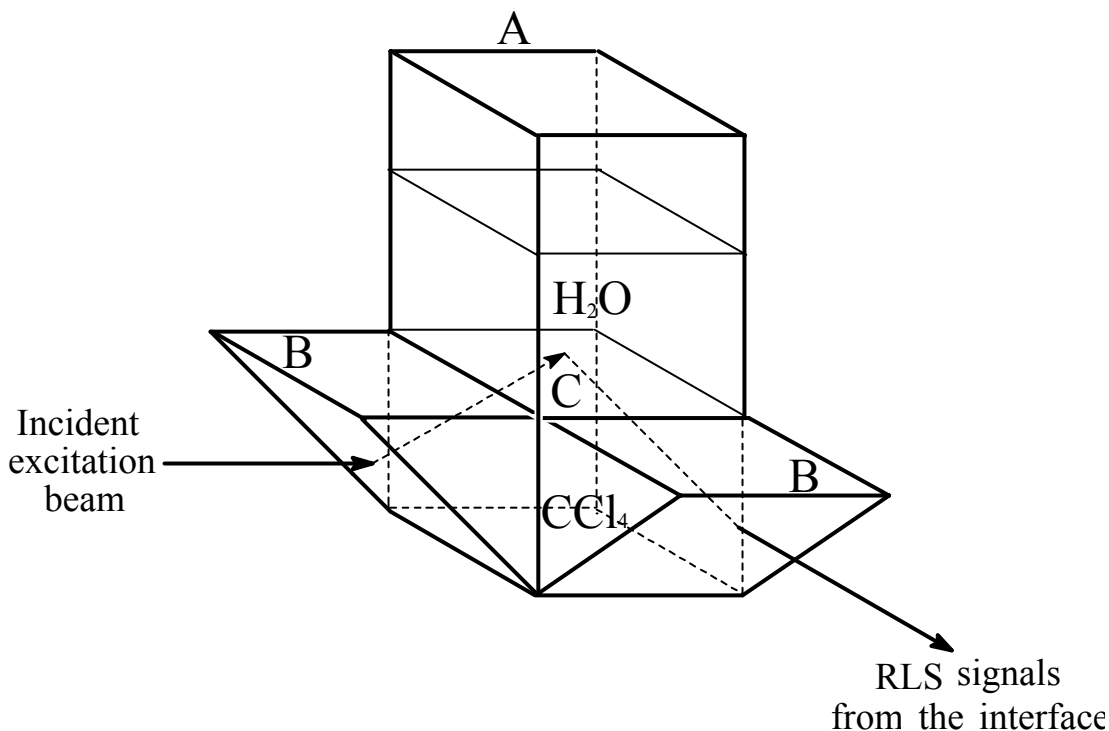


Fig. S1 Schematic drawing of the optical cell arrangement for the TIR-RLS measurements; (A) 10 mm optical quartz cell, (B) right-angled quartz prism, (C) the H₂O/CCl₄ interface.

Calculation of the incidence angle at the CCl₄/H₂O interface

Both prism and cuvette are made of quartz, whose refractive index is 1.500. The incidence angle (θ , 72.6°) is calculated according to Snell law. The procedures are as follow:

(1) When the incidence light penetrates the face of the prism from the air with the incident angle of 45°, the refractive angle i_1 can be calculated with the Snell equation:

$$n_{\text{air}} \sin i = n_{\text{prism}} \sin i_1 \quad (n_{\text{air}}=1.000, n_{\text{prism}}=1.500),$$

$$\text{so } i_1 = 28.1^\circ \text{ and } i_2 = 45^\circ - i_1 = 16.9^\circ.$$

(2) The light gets across the prism then transfers into the wall of cuvette without changing the propagation direction as they are made of the same material, nevertheless the refraction will occur at the cuvette/CCl₄ interface and the incident angle is 16.9°.

Similarly, the refractive angle i_3 can also be reckoned with the Snell equation:

Since $n_{\text{prism}} \sin i_2 = n_{\text{ccl4}} \sin i_3$ ($n_{\text{prism}}=1.500$, $n_{\text{ccl4}}=1.460$),
then $i_3 = 17.4^\circ$, $\theta = 90^\circ - 17.4^\circ = 72.6^\circ$.

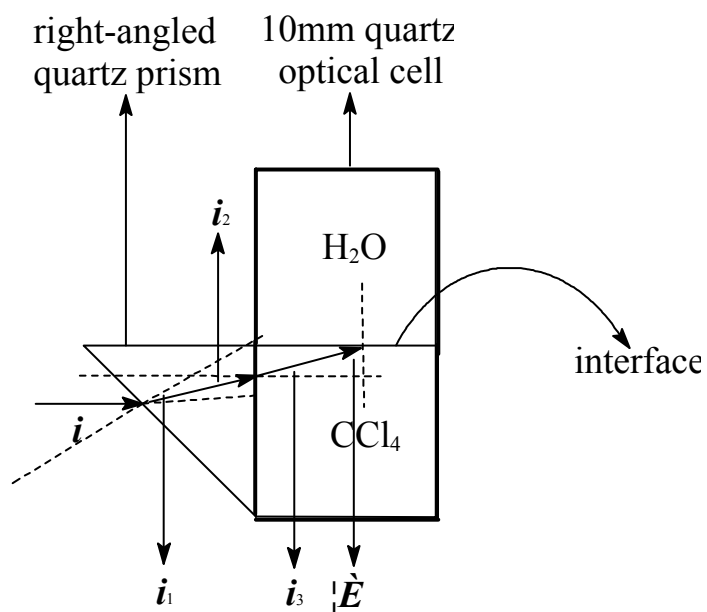


Fig. S2 Graphic illustration of the calculation of the incidence angle at the $\text{CCl}_4/\text{H}_2\text{O}$ interface.