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Supplementary Information

Probing blood plasma samples for the detection of diabetes using SERS aided by PCA and LDA multivariate data analyses

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Synthesis protocol of Gold nanocolloids (AuNCs)

An amount of 50 ml aqueous solution of $HAuCl_4$ (0.25 M) and 300 µl trisodium citrate (1%) was heated up to boiling with vigorous stirring. The colour of the gold colloidal solution turns from deep blue to reddish pink in the process of reduction indicates the formation of Au nanocolloids. The as prepared AuNCs show single extinction maximum at ~ 533 nm (Fig. S3).

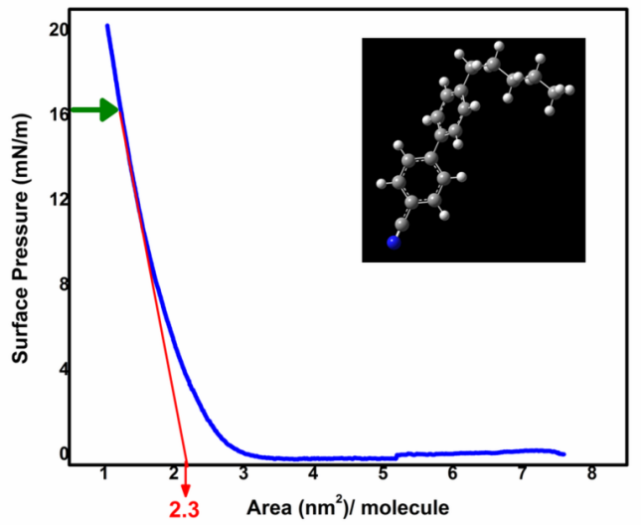

Fig. S1 Room temperature surface pressure (π)-area (A) compression isotherm of 5-CB LC molecule in water subphase (pH ~ 6.8). Inset shows the optimized molecular structure of 5-CB.

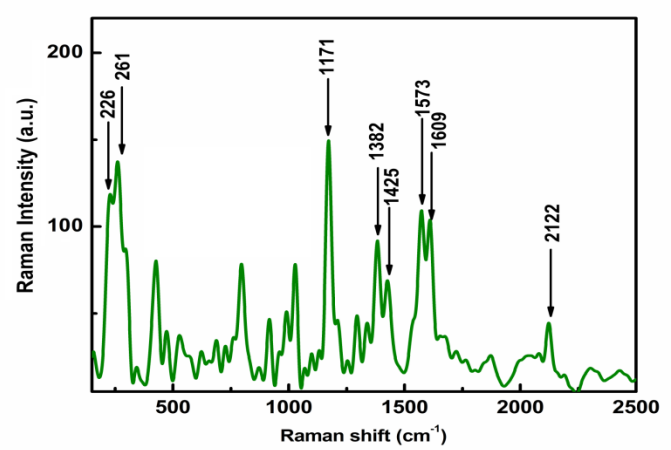

Fig. S2 SERS spectrum of 𝓛–RSh film of 5-CB molecules upon incubation in AuNCs for 36 h.

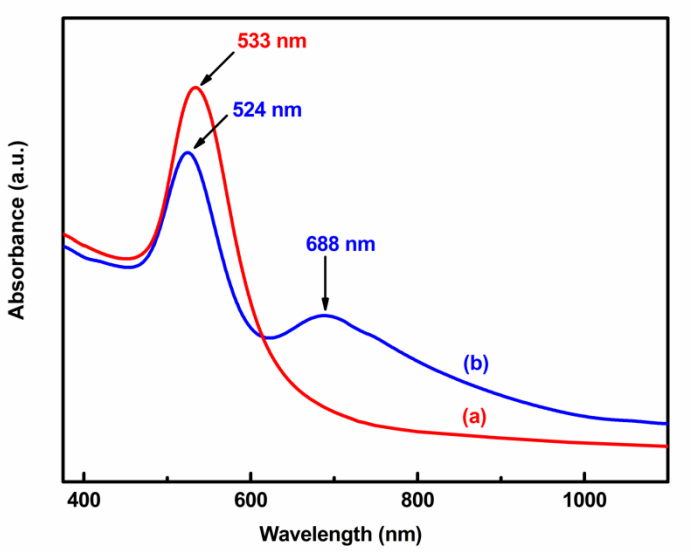

Fig. S3 Room temperature UV-Vis absorption spectra of (a) AuNC solution, (b) as prepared substrate.

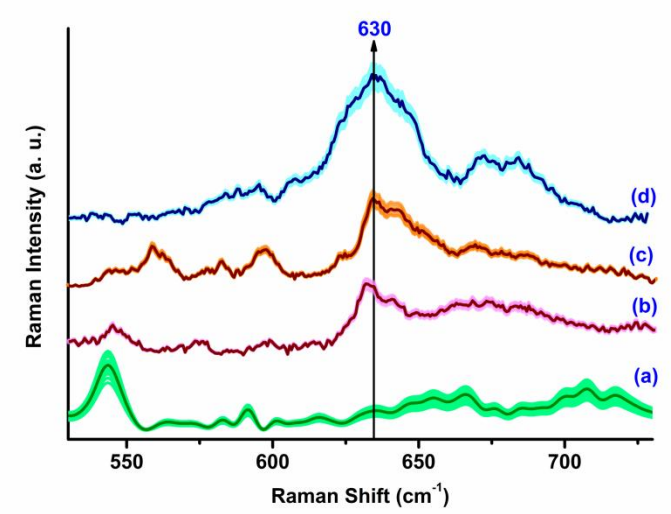

Fig. S4: SERS spectra of healthy blood plasma samples of Group: I (a) without adding and [(b) – (d)] after adding 100, 200, 300 μM concentrations of L-tyrosine. The green, purple, orange and the blue shaded regions mark the averaged out SERS spectra of the ten individuals belonging to Group: I in absence and in the presence of L-tyrosine of various concentrations respectively. [λ_{exc} = 785 nm, Laser Power : ~ 2 mW]

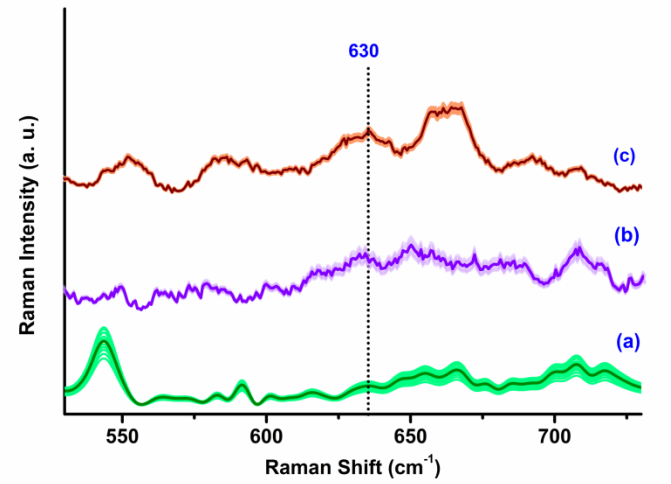

Fig. S5: SERS spectra of healthy plasma samples of Group: I (a) without adding and [(b), (c)] after adding 100 and 300 μM concentrations of lactose. The green purple and orange shaded regions mark the averaged out SERS spectra of the ten individuals belonging to Group: I in absence and in the presence of lactose of various concentrations respectively. [λ_{exc} = 785 nm, Laser Power : ~ 2 mW]

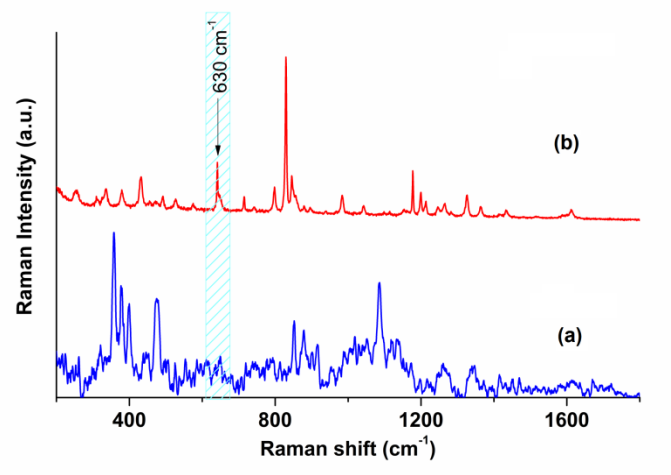

Fig. S6: Raman spectra of (a) lactose and (b) L-tyrosine in powder forms. [$\lambda_{exc==}$ 785 nm, Laser Power : ~ 2 mW]

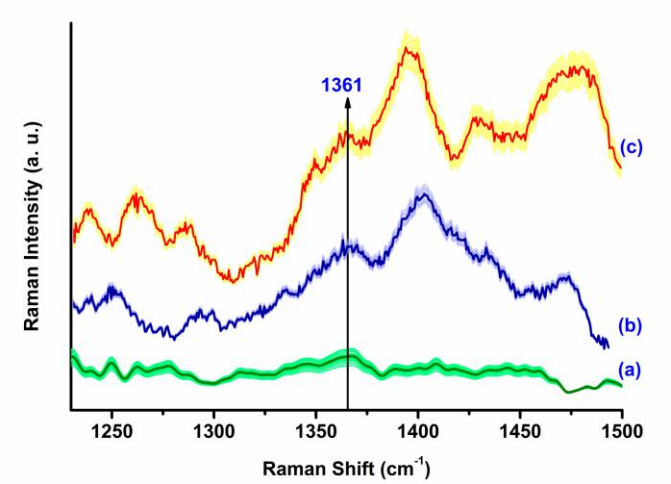

Fig. S7: SERS spectra of healthy blood plasma samples of Group: I (a) without adding and [(b), (c)] after adding 220 and 445 mg/dl final concentration of glucose respectively.The green, blue and yellow shaded regions mark the averaged out SERS spectra of the ten individuals belonging to Group: I in absence and in the presence of glucose of various concentrations respectively. [λ_{exc} = 785 nm, Laser Power : ~ 2 mW]