Electronic Supplementary Material (ESI) for Analyst.

Supporting Information

In vivo quantitative Raman-pH sensor of arterial blood based on laser trapping of erythrocytes

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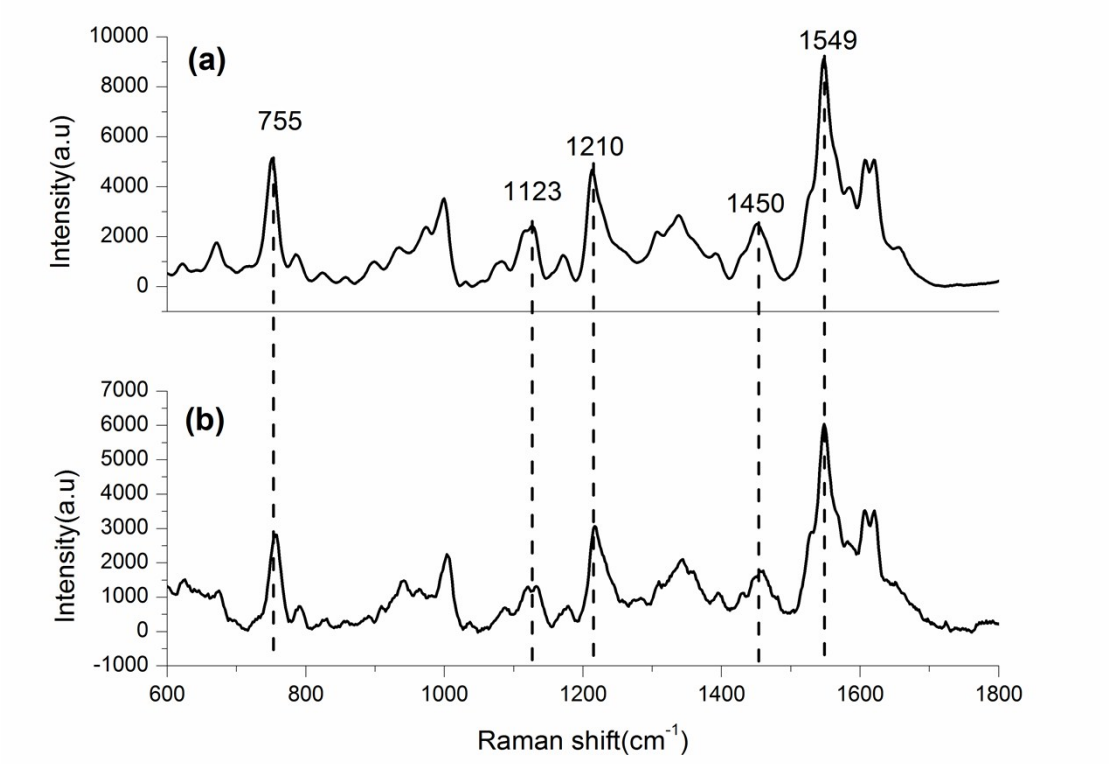
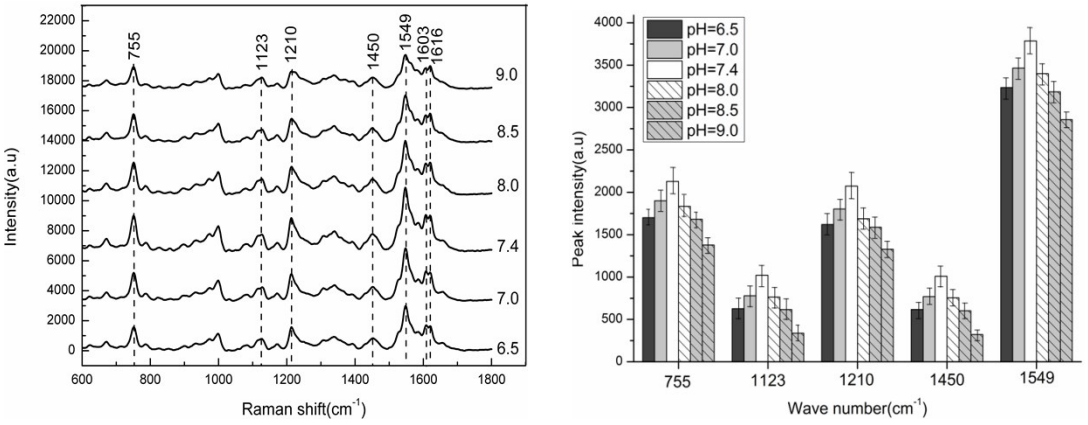


Fig. S1 (a) Raman spectra of erythrocytes and (b) Raman spectra of hemoglobin excited by a near-infrared laser at 780 nm



(a) **(b)**

Fig. S2 (a) Raman spectra and the characteristic peak intensity (b) of hemoglobin under different pH environments

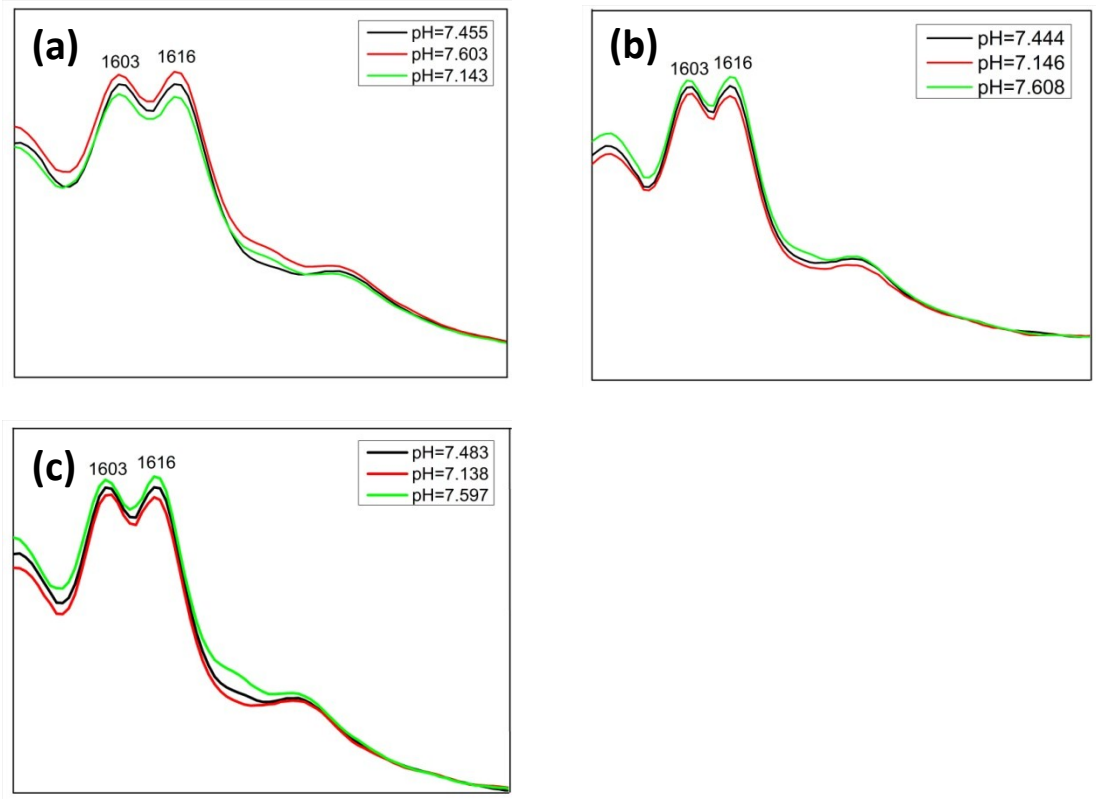


Fig. S3 The enlarged panels of the characteristic Raman peaks at 1603 and 1616 cm^{-1} of single erythrocytes under different blood pH conditions (acidosis: <7.4, alkalosis: >7.4, and normal: ~7.4); (a), (b) and (c) represent three replicates, respectively.

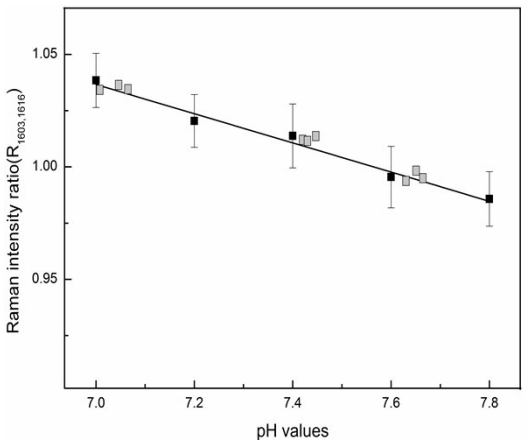


Fig. S4 The linear graphs plotted by $R_{1603,\ 1616}$ with the extracellular pH ranging from 7.0 to 7.8 (R^2=0.985) and the distribution of the dots (pH, $R_{1603,\ 1616}$) (gray) plotted by *in vivo* Raman measurements.

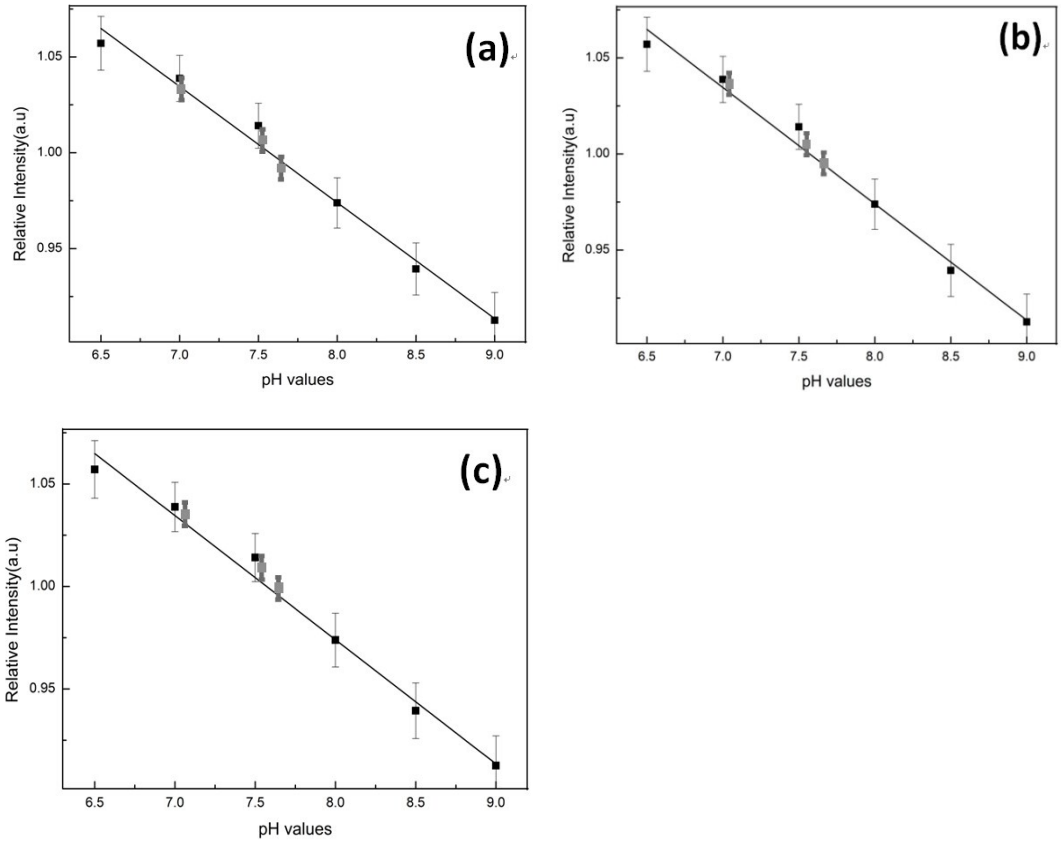


Fig. S5 The distribution of the dots (pH, $\boldsymbol{R}_{1603,\ 1616}$) (gray) plotted by in vivo Raman measurements under different blood pH on the linear graph (black) plotted by in vitro Raman measurements; (a), (b) and (c) represent three replicates, respectively.

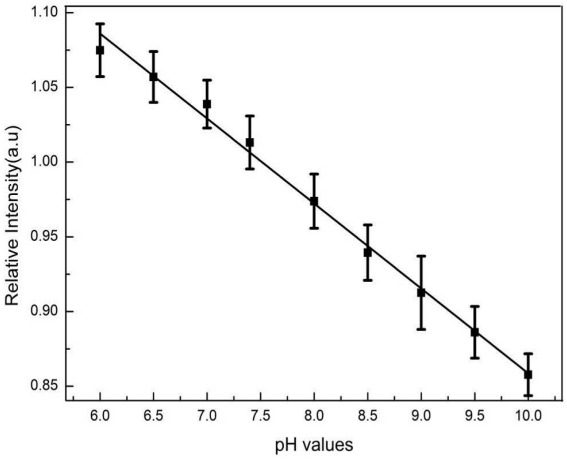


Fig. S6 The linear graphs plotted by $\boldsymbol{R}_{1603,\,1616}$ with the extracellular pH ranging from 6.0 to 10.0