Electronic Supplementary Material (ESI) for Analytical Methods.

A SERS pH sensor for high alkaline condition and its application for pH sensing in aerosol droplet

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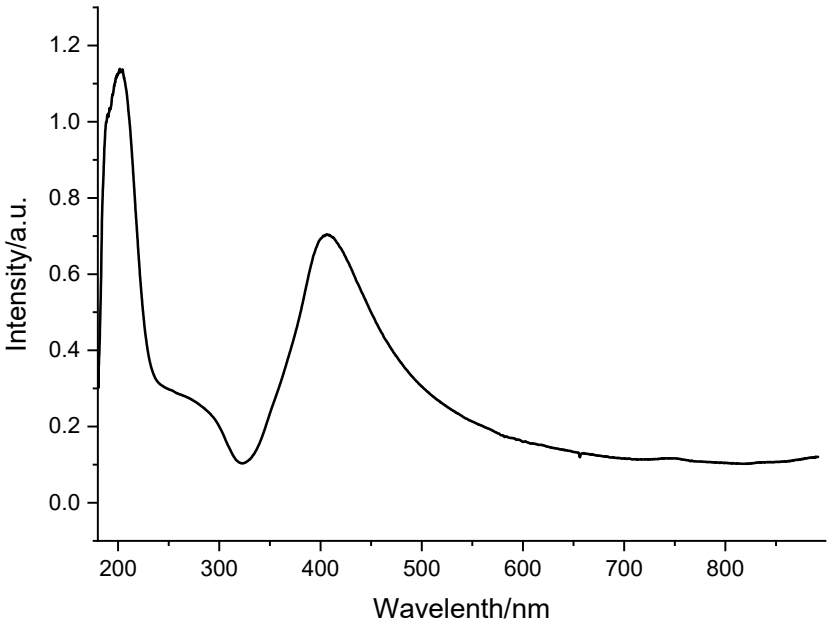

Figure S1 UV absorption spectra of Ag NPs

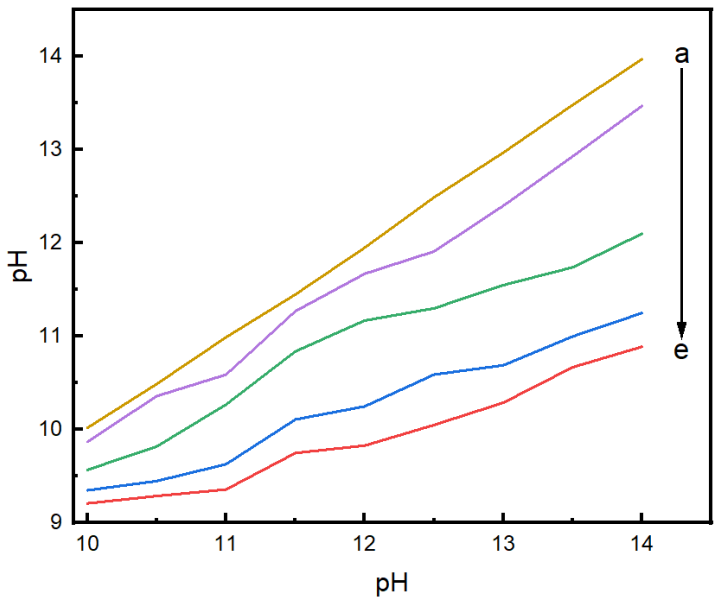

Figure S2 (a-e) The variation trend of pH after the probe suspension is mixed with different concentrations of NaOH solution in various proportions. The ratios of probe suspension to NaOH are (a-e) 1:20, 1:10, 1:5, 1:2, 1:1.

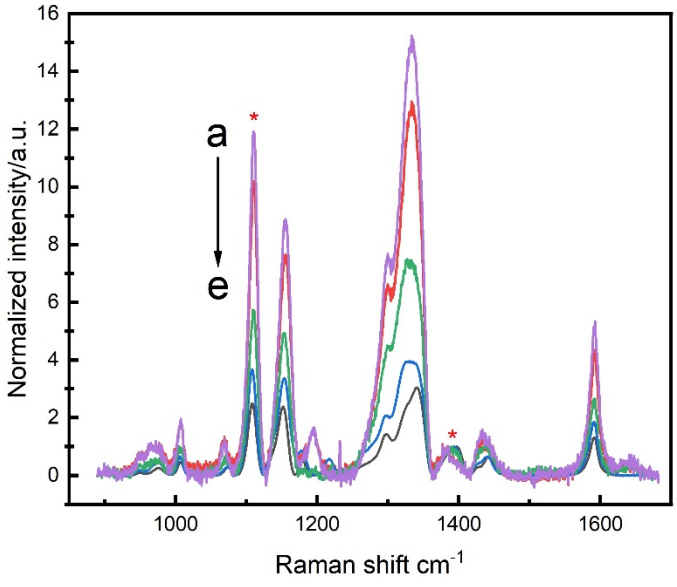

Figure S3 SERS spectra of Alizarin Yellow R on silver nanoparticles prepared from sodium borohydride under in pH conditions. The specific pH conditions are (a-e) 14.04, 13.02, 12.01, 11.02, 10.04.

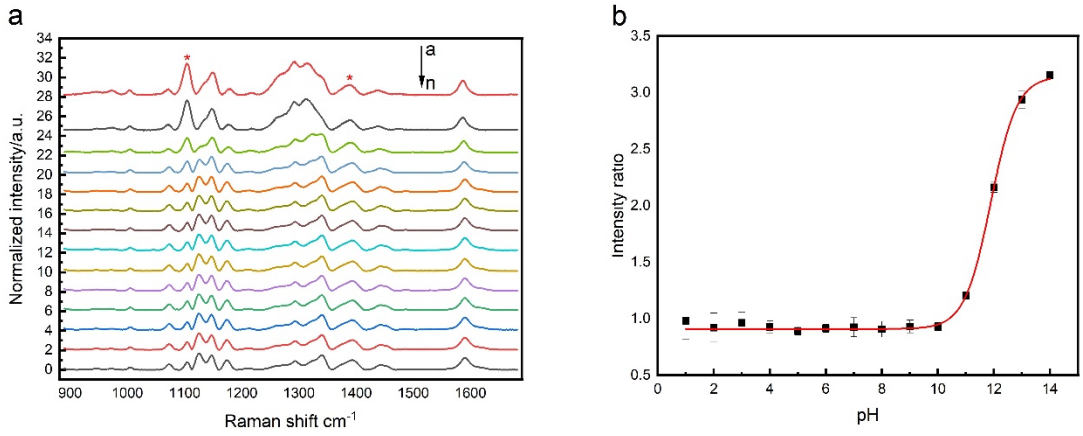

Figure S4 SERS spectra of Alizarin Yellow R on silver nanoparticles prepared from sodium borohydride under in pH conditions. The specific pH conditions are (a-e) 14.04, 13.02, 12.01, 11.02, 10.04.

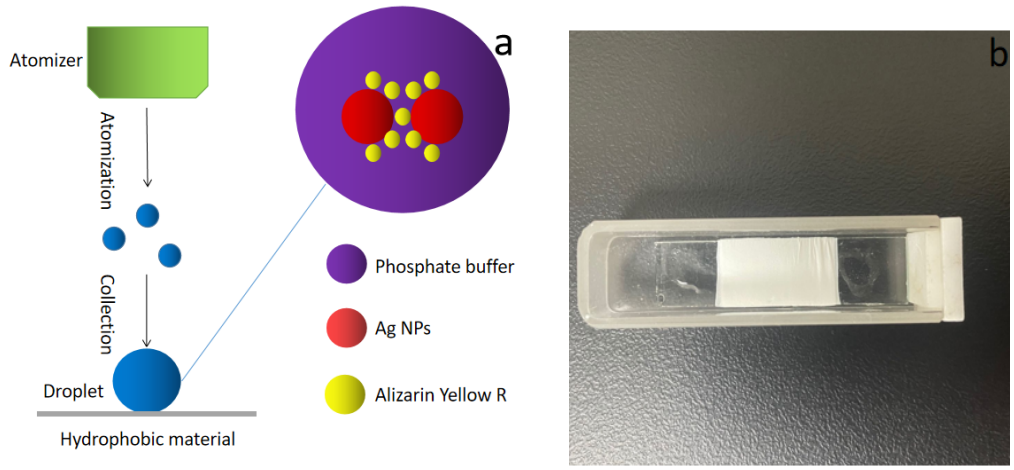

Figure S5 (a) Schematic diagram of droplet generation and collection; (b) Physical map of the collection device.

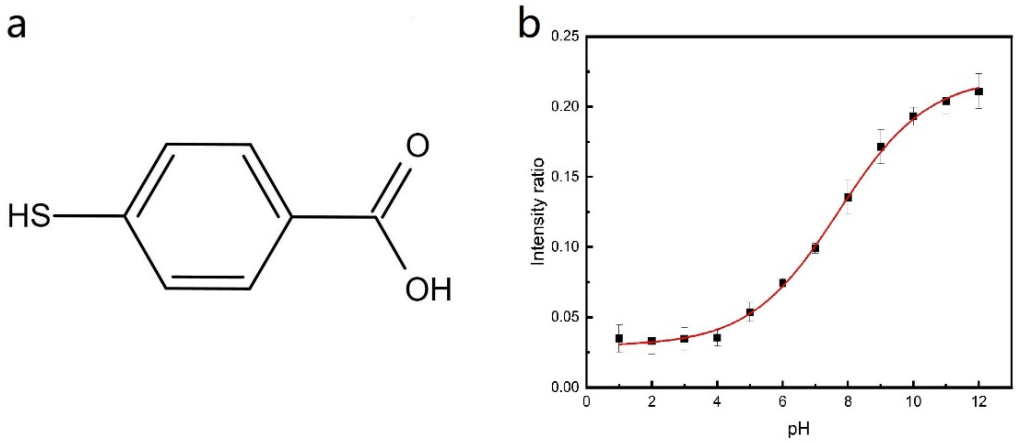

Figure S6 (a) Molecular structure of the 4-MBA probe. (b) The pH calibration curve for 4-MBA.

Model	Logistic
Equation	$y = A_2 + (A_1-A_2)/ (1 + (x/x_0) ^p)$
Drawing	Mean
A_1	0.78016 ± 0.09409
A_2	3.23019 ± 0.21564
x_0	11.94844 ± 0.13932
p	18.38358 ± 3.55565
R-squared（COD）	0.99258
Adj. R-Square	0.98812

Table S1 Relevant parameters of the calibration curve