Electronic Supplementary Material (ESI) for Analytical Methods.

Supporting Information

Rapid and direct detection of illicit dyes on tainted fruit peel using PVA hydrogel surface enhanced Raman scattering substrate

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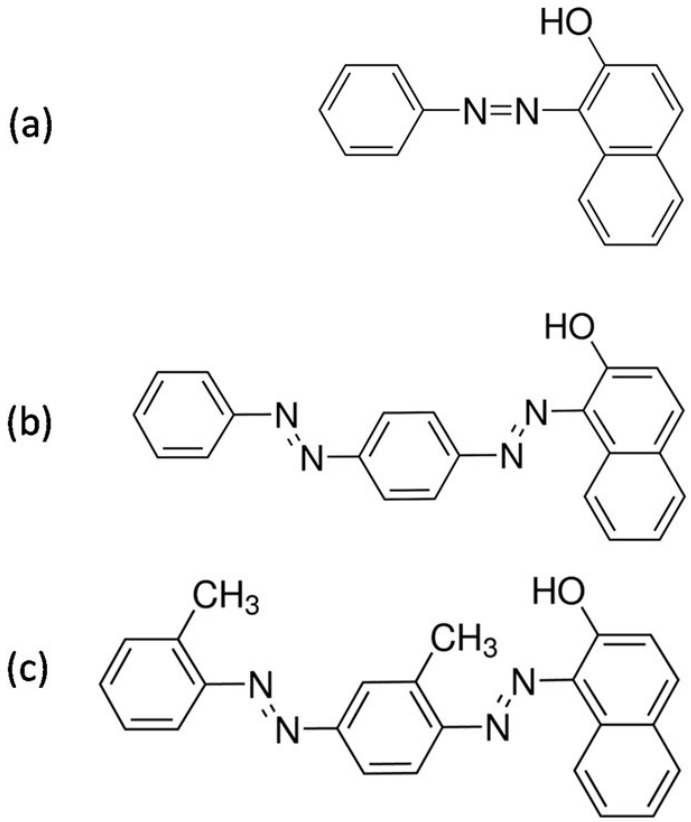

Fig. s1 Structure of SR I (a), SR III (b), and SR IV (c).

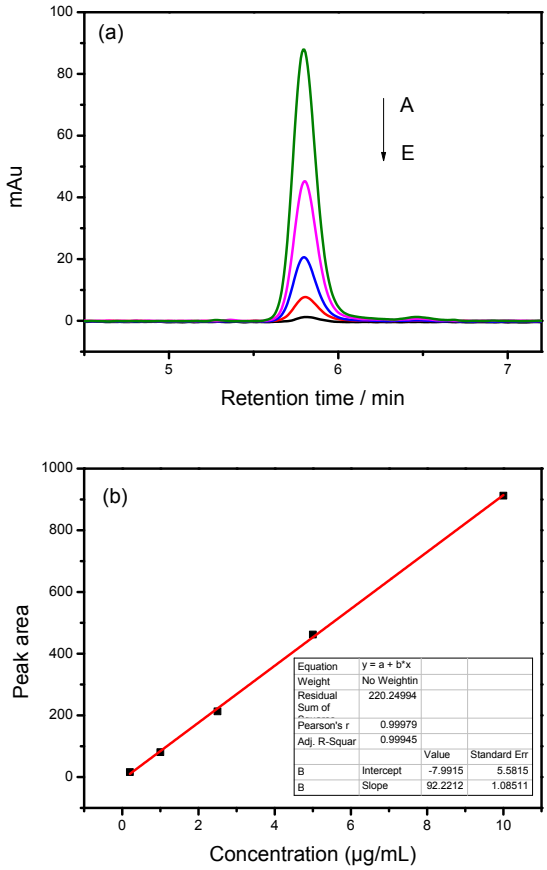

Fig. s2 (a) HPLC chromatograms (the concentrations of SR III of A-E are 10, 5, 2.5, 1, and 0.2 μg/mL, respectively) and (b) HPLC calibration curve (with fitting equation: y=a+bx, where a=-5.610, b=91.88, R^2 = 0.9998).

To validate the method, 200 μL 5ppm SR III EtOH solution was spiked into 2 g grinded kumquat. 4 SR III spiked kumquat samples were analyzed (data not shown), and the recoveries for four samples are 95.65%, 87.60%, 80.00%, and 93.55% respectively.

The SR III contents in SR III dyed kumquat samples were analyzed using the same HPLC parameters and calculated with the linear equation in Fig. s2. The results were listed in Table 1.

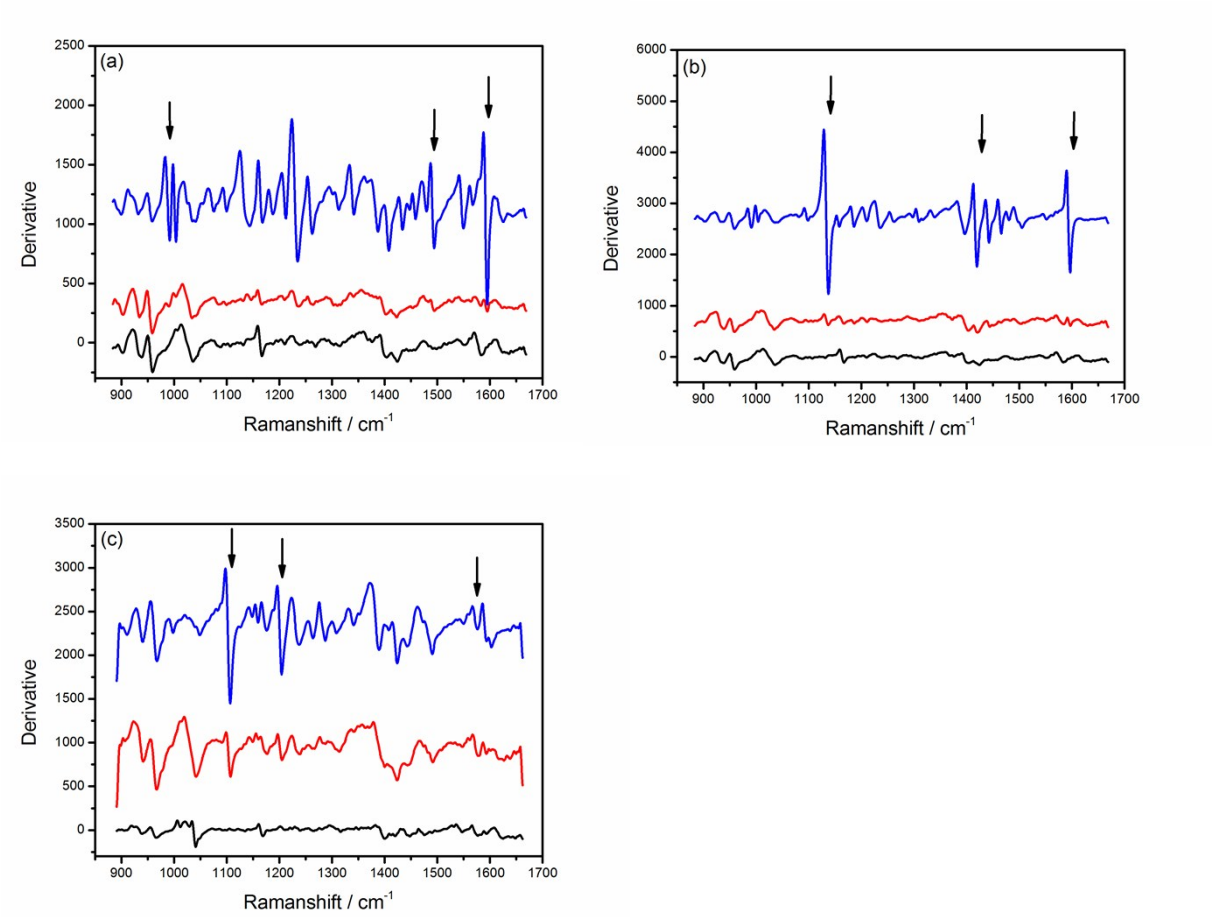

Fig. s3 Differentiated SERS spectra of SR I (a), SR III (b) and SR IV (c) obtained by stamping on slide glass at different concentrations, respectively. Volume, 20 μL. Concentrations (top to bottom): a, 100, 1, 0 ppm; b, 10, 0.1, 0 ppm; c, 10, 1, 0 ppm. Arrows indicate the characteristic bands of the given dyes.

Table s1 Comparison of Sudan III content in kumquat fruit during the course of storage obtained with SERS stamping and HPLC. Note the discrepancy of the two sets of data is probably caused by: 1) the SR III is probably not evenly distributed on the fruit peel, nor among fruits; and 2) not all of the dye is on the surface of the fruit.

Contents of Sudan III	1st day	8th day	12th day	17th day	25th day
SERS (ng g^{-1}(kumquat))	8.308	8.940	14.30	11.43	10.40
HPLC (ng g^{-1}(kumquat))	103.5	245.5	225.2	78.90	123.8