Supporting Information

High performance surface-enhanced Raman scattering from molecular imprinting polymers capsulated silver spheres

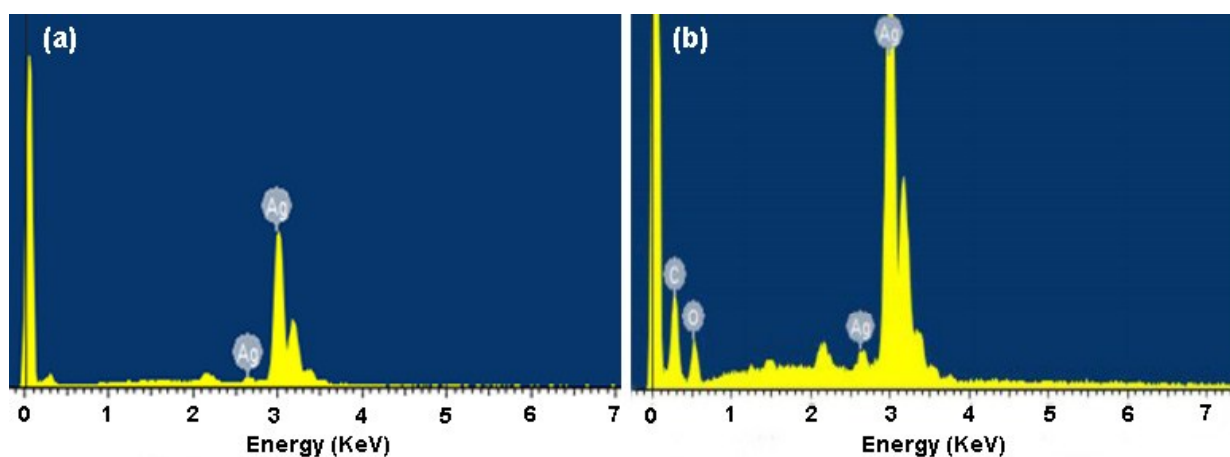Yan Guo,[a] Leilei Kang,[a] Shaona Chen[a] and Xin Li*[b,a]

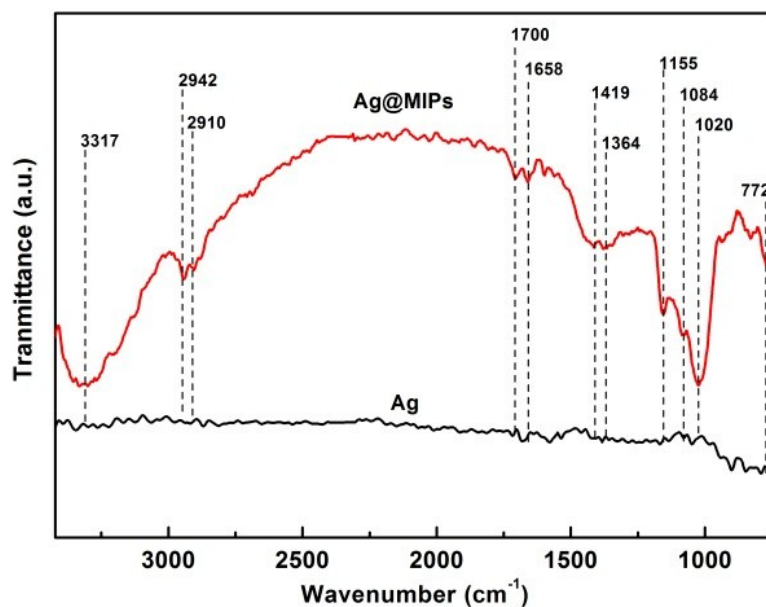**Fig. S1** EDS spectra of Ag spheres (a) and Ag@MIPs (b).

Fig. S2 The Fourier transform infrared (FTIR) spectra of Ag and Ag@MIPs.

The strong and broad absorption around 1020 cm^{-1} can be ascribed to the Si-O-Si asymetric stretching and two weak peaks at 772 cm^{-1} and 1364 cm^{-1} are contributed by the Si-O and C-H vibrations of silylation reagent. Two peaks at 1084 cm^{-1} and 1155 cm^{-1} are characteristics of the C-O-C vibrations of cross linking agent (EGDMA). The appearance of 1419 cm^{-1} (C-N streching vibration), 1658 cm^{-1} (N-H in-plane bending vibration), 1700 cm^{-1} (C=O streching vibration) and 3317 cm^{-1} (N-H streching vibration) clearly indictes the presence of functional monomer (acrylamide). Other peaks at 2942 cm^{-1} and 2910 cm^{-1} are responsible for the aliphatic C-H streching vibrations.
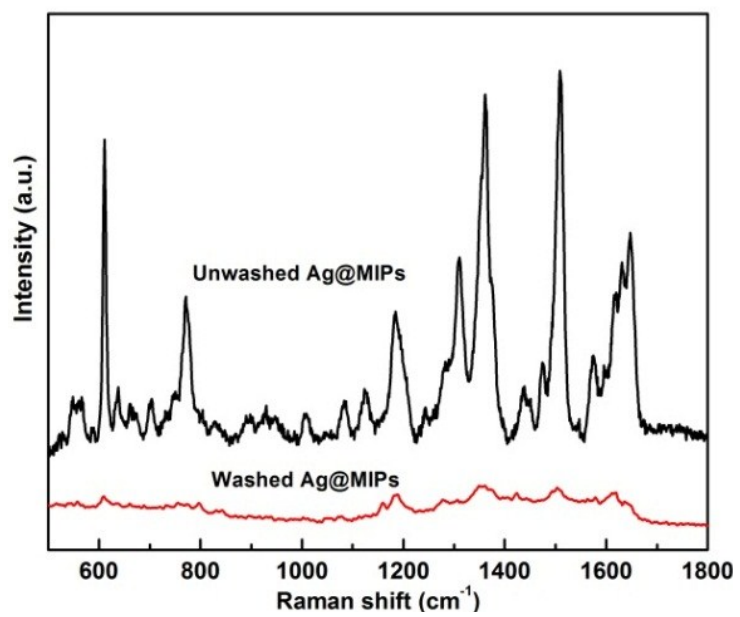
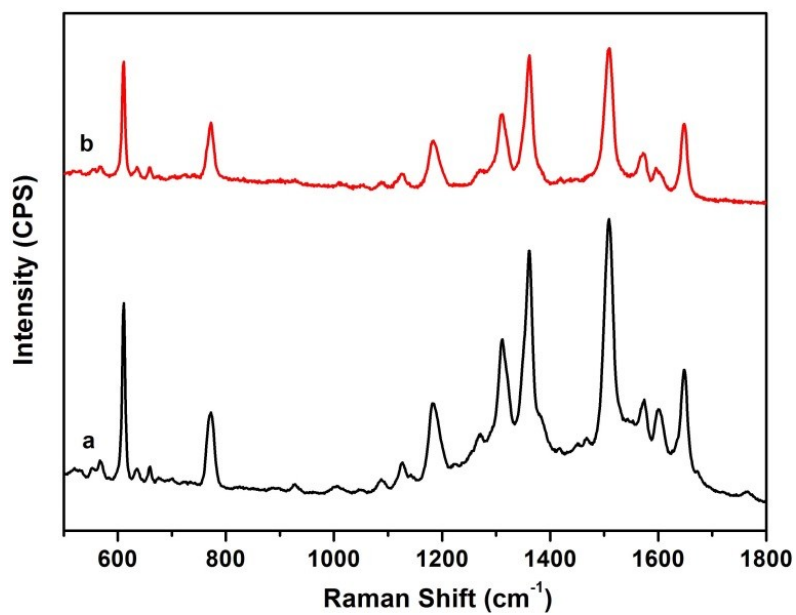**Fig. S3** Raman spectra of washed and unwashed Ag@MIPs.

Fig. S4 SERS spectra of R6G at a concentration of 10^{-5} M collected from (a) Ag@MIPs and (b) Ag particles.
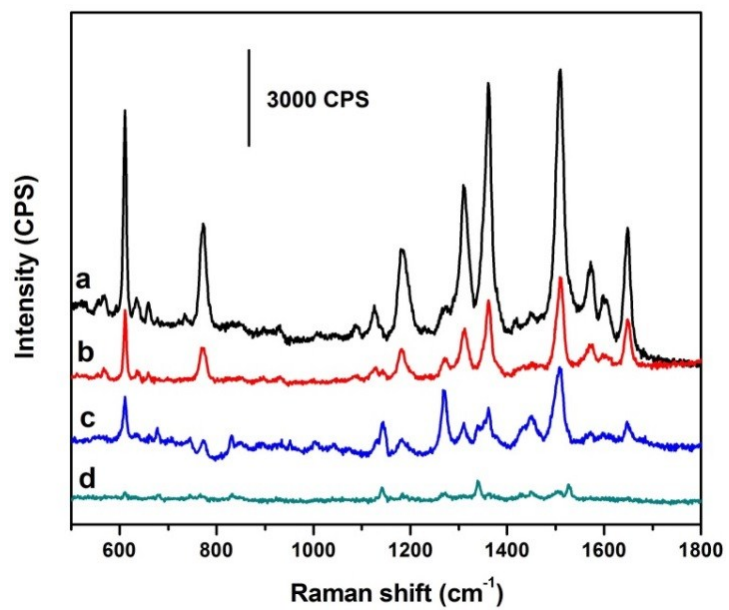
Fig. S5 SERS spectra of R6G obtained from Ag particles at a concentration of (a) 10^{-5} M, (b) 10^{-6} M, (c) 10^{-7} M and (d) 0 M.
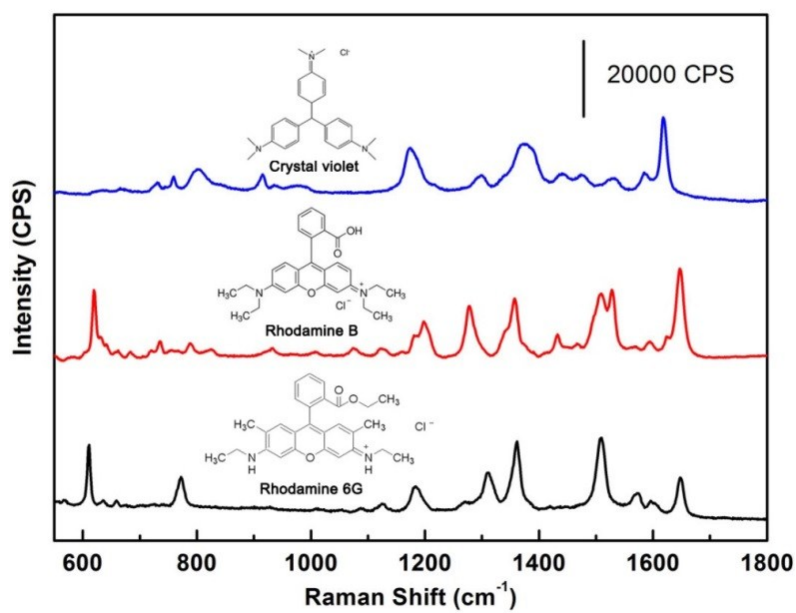
Fig. S6 SERS spectra of R6G, RB and CV recorded from Ag spheres at a concentration of 10^{-5} M and their corresponding molecular structures.

Calculation of the enhancement factor (EF)

The enhacement factor was estimated according to the following equation:

$$EF = \frac{I_{SERS}/c_{SERS}}{I_{NR}/c_{NR}}$$

Where I_{SERS} and I_{NR} are peak intensities of SERS and normal Raman spectra at the same position. C_{SERS} and C_{NR} present solution concentration used in measuring SERS and Raman spectra.