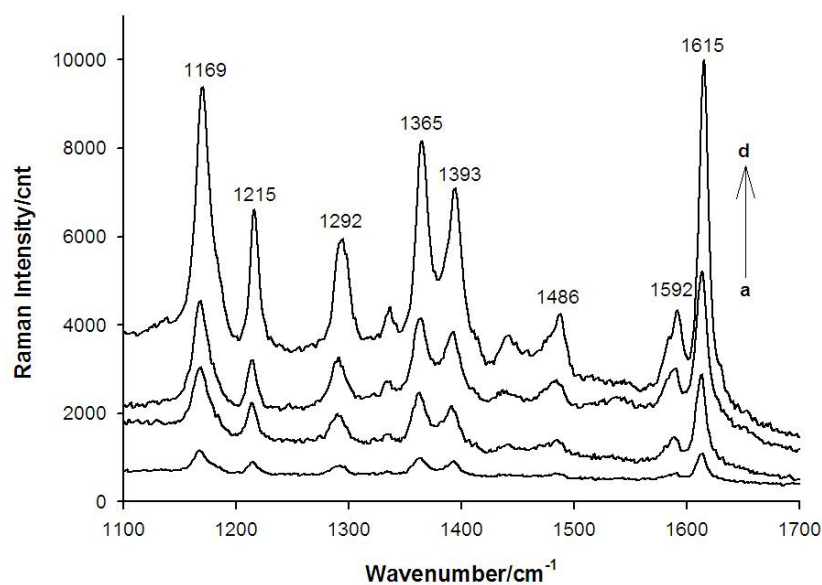


Paper-based Surface-enhanced Resonance Raman Spectroscopic (SERRS) Immunoassay Using Magnetic Separation and Enzyme-catalyzed reaction

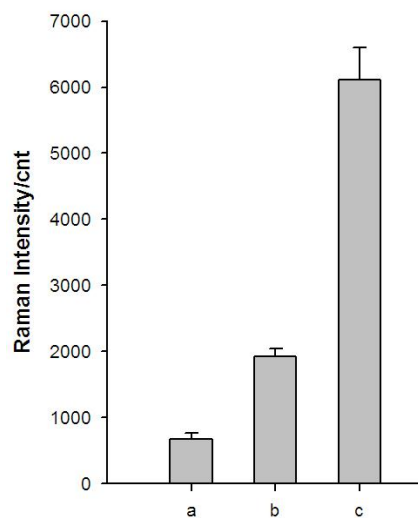
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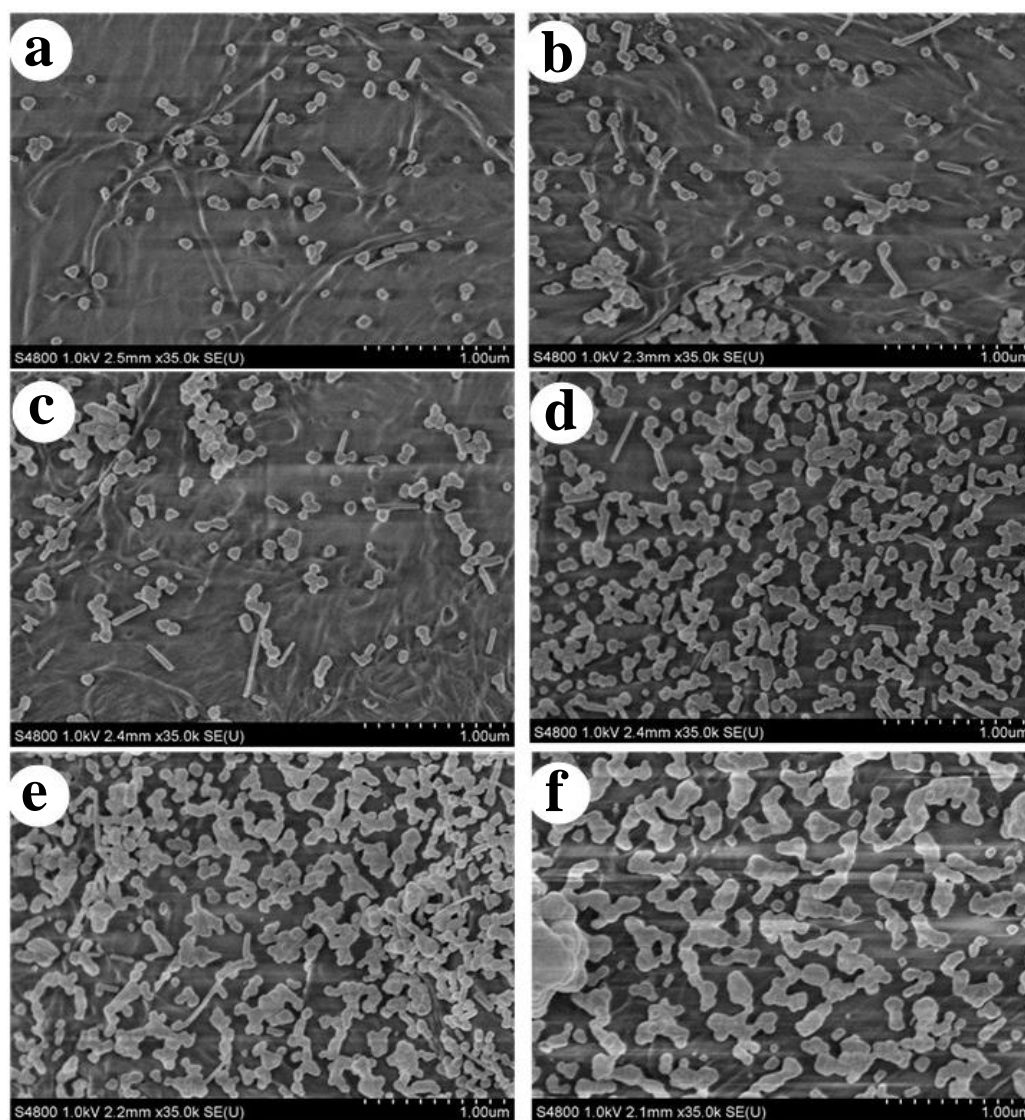
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Canada



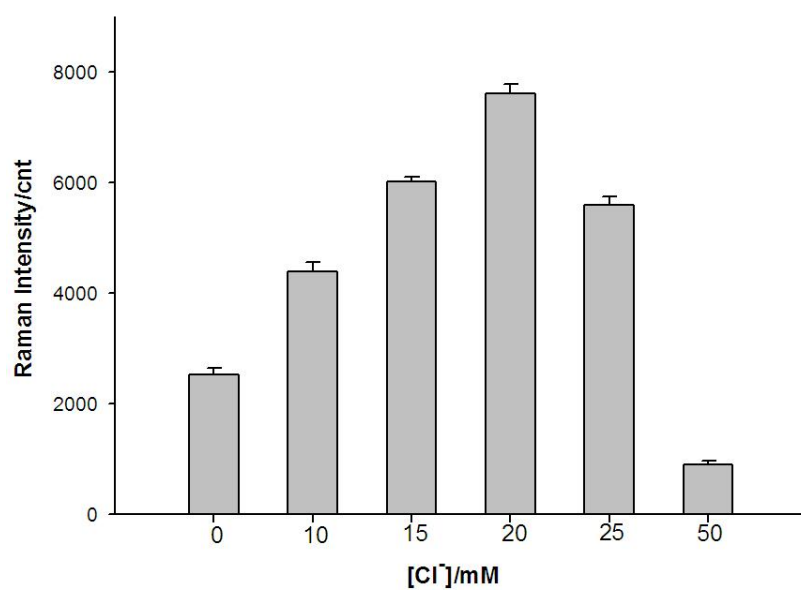
SI 1A The **SERRS** spectra of malachite green (10^{-6} M) addition: (a) after silver colloids were dried on the filter paper using stock solution of silver sol; (b) mixed with 10x concentrated silver sol prior to making the silver colloids substrate on filter paper; (c) before silver colloids were dried using 10x concentrated silver sol; (d) after silver colloids were dried on filter paper using 10x concentrated silver sol.



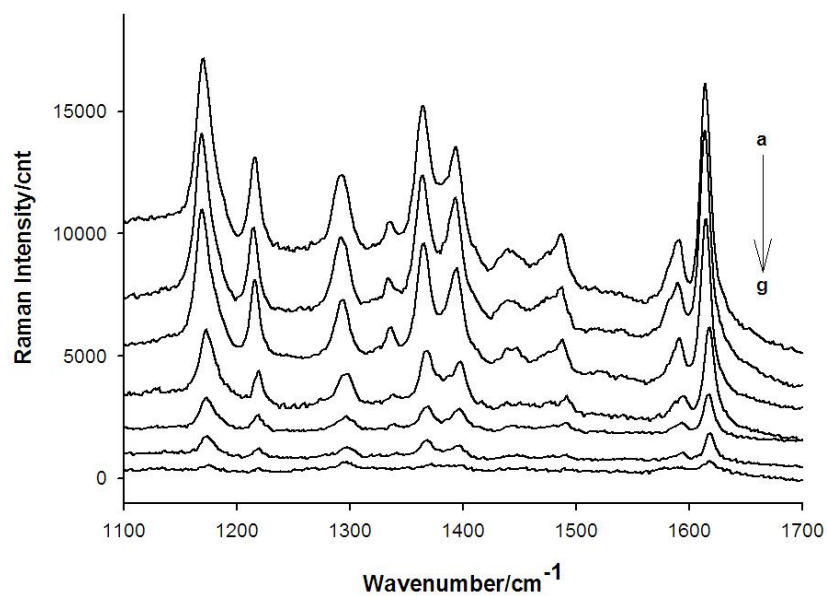
SIIB (a) MG molecules were mixed with silver colloids and then spotted onto the filter paper (b) Silver colloids were spotted onto the filter paper (but not dried) before addition of MG (c) Silver colloids were spotted onto the filter paper and dried before spotting the MG.



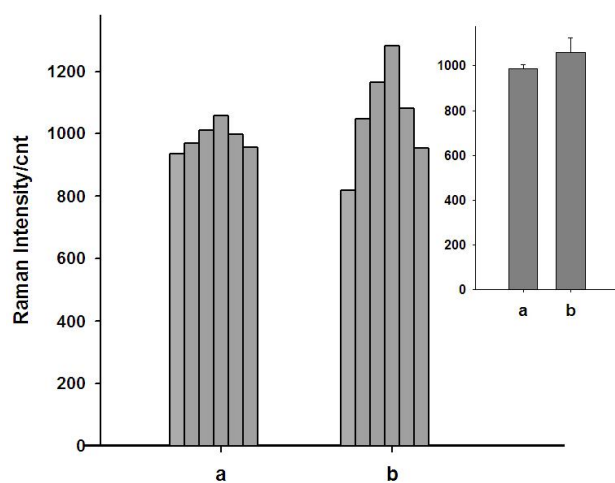
SI2 The SEM of silver colloid morphology on filter paper prepared with different chloride ion concentrations for pre-aggregation: (a) 0mM; (b) 10mM; (c) 15mM; (d) 20mM; (e) 25mM; (f) 50mM.



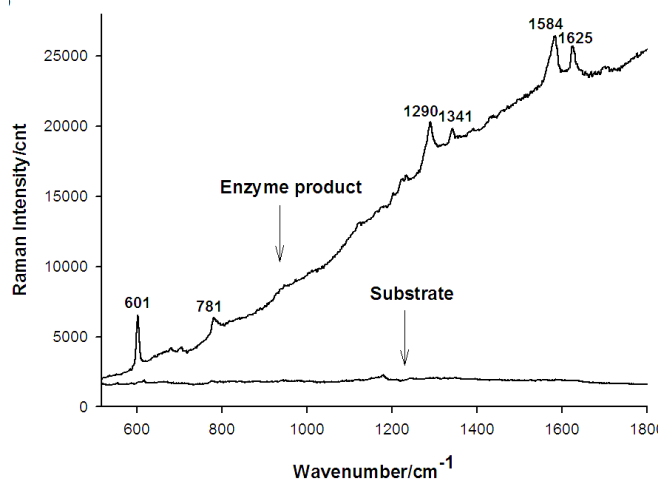
SI3 The **SERRS** intensity of MG (10^{-7} M) at 1615cm^{-1} on different paper based silver colloids substrates prepared with different chloride ion concentrations corresponding to the SERS substrates shown in SI2. Each data plot is the average of at least 6 detections.



SI4 **SERRS** spectra of different MG concentrations on paper based silver colloid substrate prepared with 20mM chloride ions as shown in SI2 d and SI3: (a) 10^{-6} M, (b) 10^{-7} M, (c) 10^{-8} M, (d) 5×10^{-9} M, (e) 10^{-9} M, (f) 5×10^{-10} M, (g) 10^{-10} M.



SI5 Distribution of SERS enhancement effect on the paper based silver colloids substrate (a) with PVP modification and (b) without PVP modification. BCIP (5-bromo-4-chloro-3-indolyl phosphate) of 3mg/mL was reacted with ALP enzyme (4.14×10^{-9} M) to produce BCIP dimer for the SERS detections. The SERS intensity at 601cm^{-1} was used for plotting. Plotted data is the average SERS intensity with standard error.



SI6 The SERS spectra of 3 mg/ml of BCIP on paper based silver colloids substrate before and after hydrolysis by ALP at 4.14×10^{-9} M.