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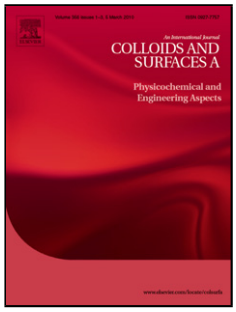

Title: SERS-from-scratch: an electric field-guided nanoparticle assembly method for cleanroom-free and low-cost preparation of surface-enhanced Raman scattering substrates

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SERS-from-scratch: an electric field-guided nanoparticle assembly method for cleanroom-free and low-cost preparation of surface-enhanced Raman scattering substrates

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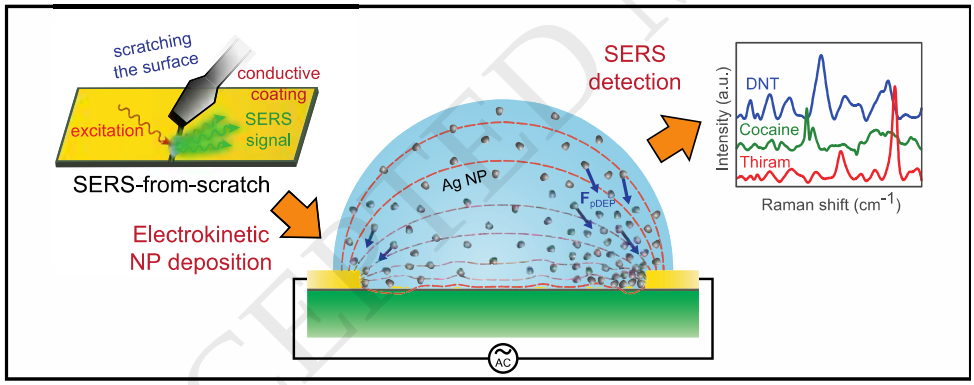
Graphical Abstract



ABSTRACT:

Ultrasensitive detection of analytes is important in forensic science, environmental monitoring and medical diagnostics. Surface-enhanced Raman scattering (SERS) is an analytical detection method with single-molecule sensitivity, but nanofabrication of SERS substrates poses a barrier to its application. Here, we report on a facile and rapid approach to prepare ultrasensitive SERS substrates *in situ* by using electrokinetics to assemble Ag nanoparticles on a scored conductive surface. We demonstrate the unique characteristic of our method to produce highly SERS-active surfaces from a wide range of materials, including commercially available glass slides pre-coated with indium