

## **Biodetection of Bacteria on Nanostructured Polymers**

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Surface enhanced Raman spectroscopy (SERS), as the basis of rapid and reliable biosensing techniques, has significant advantages of minimal sample preparation and ease of operation compared to other bio-culture and amplification methods. However, applications to biomedical problems have lagged because current substrates lack highly reproducible and spatially uniform SERS responses to biological samples. In this manuscript, we reported the development of SERS substrates that provide a highly uniform and reproducible bioanalysis surface and demonstrated with examples of "fingerprint" signals from different bacteria types in which the signals differ based on variations in the cell membranes. The advantage of using these new types of substrates is that no template or lithography is involved, thus providing a simple, inexpensive and quick method to achieve highly sensitive and spatially uniform SERS signal for biomedical applications.