

Abstract Submitted
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Silver based SERS substrates fabricated from block copolymer thin film XIN ZHANG, WONJOO LEE¹, SEUNG YONG LEE², Department of Materials Sci. & Eng., Univ. of Maryland, College Park, MD, ZHENGHAN GAO, Biophysics Program, Univ. of Maryland, College Park, MD, ODED RABIN³, R.M. BRIBER⁴, Department of Materials Sci. & Eng., Univ. of Maryland, College Park, MD — Poly (styrene-block-4-vinyl pyridine) (PS-b-P4VP, Mw = 47-b-10 kDa, PDI=1.10) thin films were used to form large-scale long range ordered self-assembled hexagonal patterns of vertically P4VP oriented cylinders in a PS matrix on Si substrates. The P4VP cylindrical domains were crosslinked and quaternized using 1,4-dibromobutane. Negatively charged 15nm gold nanoparticles were attached to the quaternized P4VP domains through Coulombic interactions. Silver was then grown on the gold seeds to create nanometer scale gaps between the nanoparticles. The gap between the nanoparticles was fine tuned by controlling the silver growth time. The substrates showed large enhancement factors in the Raman scattering signal for a broad range of incident wavelengths.

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