

Abstract Submitted
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Nanoparticle decoration overlayer for producing a surface enhanced Raman scattering spectrum of a pre-existing polymer surface.
BETTINA ROAN, THOMAS FURTAK, Colorado School of Mines — A new method was used for obtaining a surface enhanced Raman scattering (SERS) spectrum of a polymer surface. SERS reactive silver nanoparticles were deposited directly onto the surface of the polymer. This differs from conventional methods of producing SERS-active samples where the analyte polymer is deposited onto a SERS reactive metal nanoparticle substrate, an approach that can only give a SERS spectrum of the buried metal-polymer interface. The new technique makes it possible to study the outermost, pre-existing surface of the polymer. We obtained a SERS spectrum of the external surface of poly(methyl methacrylate) (PMMA) using this method. The vacuum evaporation parameters of the silver nanoparticles were adjusted to optimize the SERS intensity of PMMA. We demonstrate the utility of this technique by measurements on surface-modified polymers.

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