TESTING OF NEW ACTIVE SURFACE BASED ON AG NANOPARTICLES BY SURFACE-ENHANCED RAMAN SCATTERING AND SURFACE ENHANCED LUMINESCENCE OF RU(II)TRIS(BIPYRIDINE) COMPLEX DICATION

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Abstract

Compact aggregates of chloride-modified Ag nanoparticles (NPs) deposited on glass slides were tested as new active surfaces for SERS and surface enhanced luminescence. For SERS spectral measurement, the selected aggregate in which [Ru(bpy)3]2+ was incorporated, was overlayed by a drop of water to prevent thermally induced decomposition of the adsorbate. SERS spectra excited at 532 nm were measured as a function of concentration, and the 1x10-14 M value of the SERS spectral detection limit was determined. A phosphorescence lifetime image of [Ru(bpy)3]2+ was obtained from an aggregate overlayed by a thin layer of 1x10-5 M aqueous solution of [Ru(bpy)3]2+, while no signal was detected from the same solution of the complex in the absence of the aggregate. This result documents observation of surface-enhanced luminescence of the [Ru(bpy)3]2+ complex dication in the presence of the Ag NPs aggregate.

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