Supplementary Information

Ruthenium dye functionalized gold nanoparticles and their spectral responses

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Supplementary material section

Figure S1: Comparison of RR (A), SERS (B) and Raman (C) spectra of Z907. The charge localization on the bipyridine ligand upon MLCT absorption within the fingerprint spectral region from 1000-1800 cm\(^{-1}\) is marked in green while the binding site via the isothiocyanate group at 2100 cm\(^{-1}\) is highlighted in blue.

Figure S2: Comparison of RR (A, B), SERS (C) and Raman (D) spectra of N719. The charge localization on the bipyridine ligand upon MLCT absorption within the fingerprint spectral region from 1000-1800 cm\(^{-1}\) is marked in green while the binding site via the isothiocyanate group at 2100 cm\(^{-1}\) is highlighted in blue.
Figure S3: RR spectra of Ru for different concentrations, $10^{-4}$ M (A), $10^{-5}$ M (B), $10^{-6}$ M (C).

Figure S4: Normal coordinates for the Raman modes 1453 cm$^{-1}$ (A) and 1603 cm$^{-1}$ (B). The displacement of the atoms is depicted by arrows.