

Supplementary Information

**Ruthenium dye functionalized gold nanoparticles and their spectral
responses**

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Supplementary material section

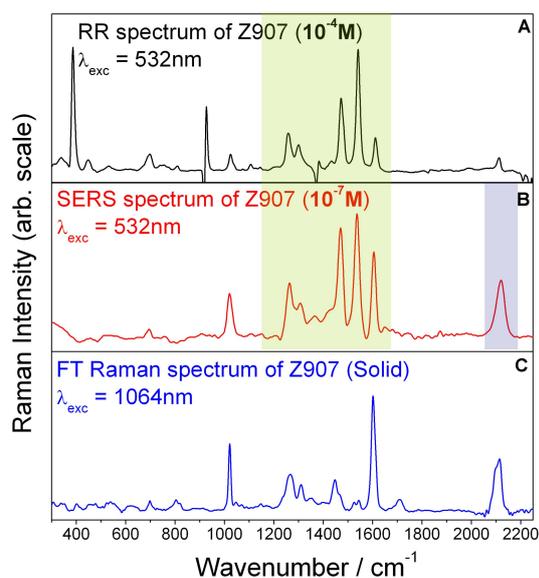


Figure S1: Comparison of RR (A), SERS (B) and Raman (C) spectra of Z907. The charge localization on the bipyridine ligand upon MLCT absorption within the fingerprint spectral region from 1000-1800 cm^{-1} is marked in green while the binding site via the isothiocyanate group at 2100 cm^{-1} is highlighted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

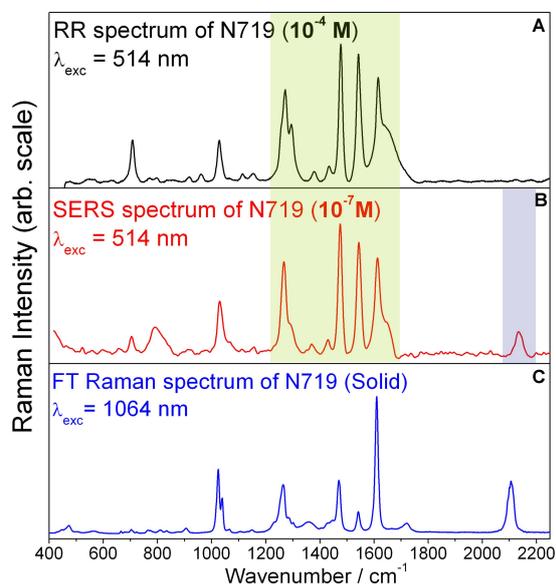


Figure S2: Comparison of RR (A, B), SERS (C) and Raman (D) spectra of N719. The charge localization on the bipyridine ligand upon MLCT absorption within the fingerprint spectral region from 1000-1800 cm^{-1} is marked in green while the binding site via the isothiocyanate group at 2100 cm^{-1} is highlighted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

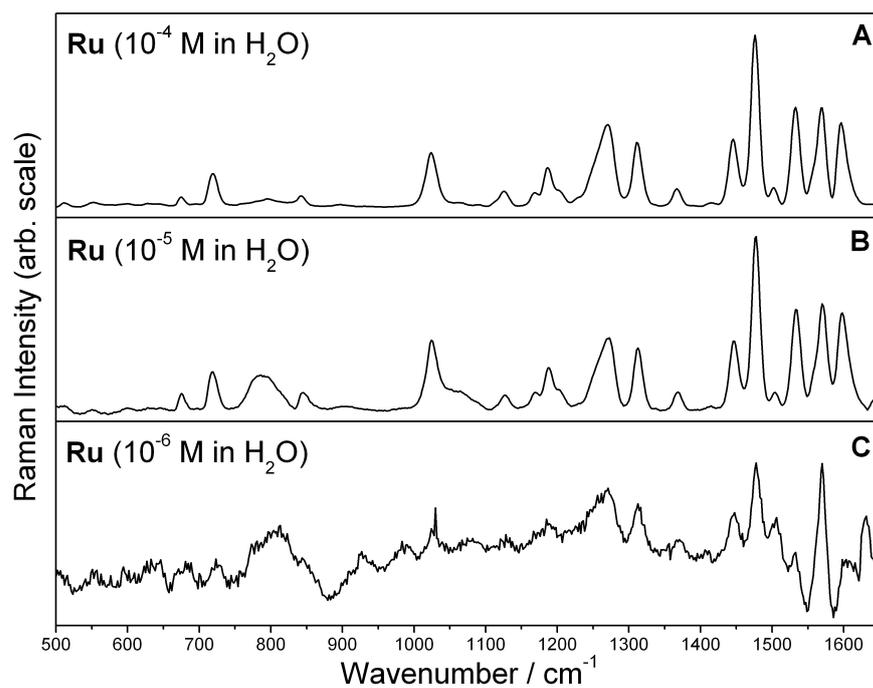


Figure S3: RR spectra of Ru for different concentrations, 10^{-4} M (A), 10^{-5} M (B), 10^{-6} M (C).

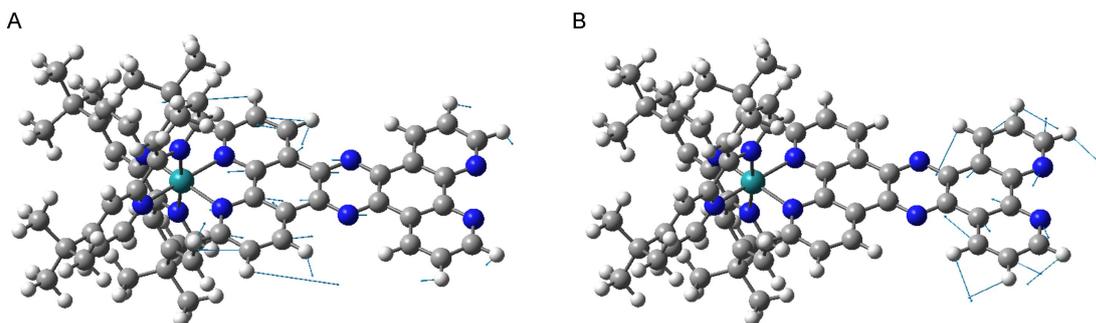


Figure S4: Normal coordinates for the Raman modes 1453 (A) and 1603 cm^{-1} (B). The displacement of the atoms is depicted by arrows.