

Supporting Information

Ru(II)trisbipyridine Functionalized Gold Nanorods. Morphological Changes and Excited-State Interactions

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Estimation of number of thiol and Ru-C₅-SH molecules bound to gold nanorods

The absorbance (O.D) at 453 nm for Ru(bpy)₃²⁺-C₅-SH = 0.0065.

The extinction coefficient for Ru(bpy)₃²⁺-C₅-SH at 453 nm = $1.49 \times 10^4 \text{ M}^{-1}\text{cm}^{-1}$.

The concentration of Ru(bpy)₃²⁺-C₅-SH bound onto Au nanorods = 0.436 μM .

The absorbance (O.D) at 700 nm for Au nanorods = 0.54

The extinction coefficient for Au nanorods at 700 nm = $0.5 \times 10^{10} \text{ M}^{-1}\text{cm}^{-1}$.

The concentration of Au nanorods used = 0.108 nM

The ratio of Ru(bpy)₃²⁺-C₅-SH to rod = $0.436 \times 10^{-6} / 0.108 \times 10^{-9} = 4037$
= 1:4037

The total surface area of Au nanorods (length 40 nm and radius 25 nm)
 $= 3140 \text{ nm}^2 + 1963 \text{ nm}^2$
= 5103 nm²

Footprint of thiol = 0.214 nm^2

Maximum number of thiols that can be accommodated by Au nanorods
= 14672 (lateral) + 9172 (both ends)
= 23844

The ratio of Ru(bpy)₃²⁺-C₅-SH to dodecane thiol = $4037 : (23844 - 4037) \approx 1:5$