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Figure S1 depicts the intensity (F_0/F) and lifetime (τ_0/τ) Stern-Volmer plots for BSA-Ac (top panel) and HSA-Ac (bottom panel). The fact that (F_0/F) and (τ_0/τ) are superimposable and that the relationships are linear demonstrate that dynamic (collisional) quenching alone governs both systems. The slopes ($K_{SV} = 7.1 \pm 0.3$ and $8.2 \pm 0.2 \text{ M}^{-1}$ for BSA- and HSA-Ac, respectively) are presented in Table 1 of the paper.

Figure S2 depicts the Stern-Volmer plot for BSA-Ac covalently attached to APTES/glutaraldehyde-derivatized silica. The slope of this line is $9.0 \pm 0.7 \text{ M}^{-1}$ and is also presented in Table 1. The error bars on the data points represent the standard deviation of at least three independent measurements. The reported uncertainty in the K_{SV} values are determined from the standard deviation of the slope.

Figure S3 represents the emission center of gravity^{S1,S2} as a function of O_2 concentration for native BSA- and HSA-Ac. It is clear that the emission spectrum of BSA-Ac (panel A) shifts to higher energies when quenched with O_2 while the HSA-Ac spectrum (panel B) remains essentially stationary. This is consistent with the K_{SV} vs emission wavelength plots that are presented in the paper (Figure 2).

References

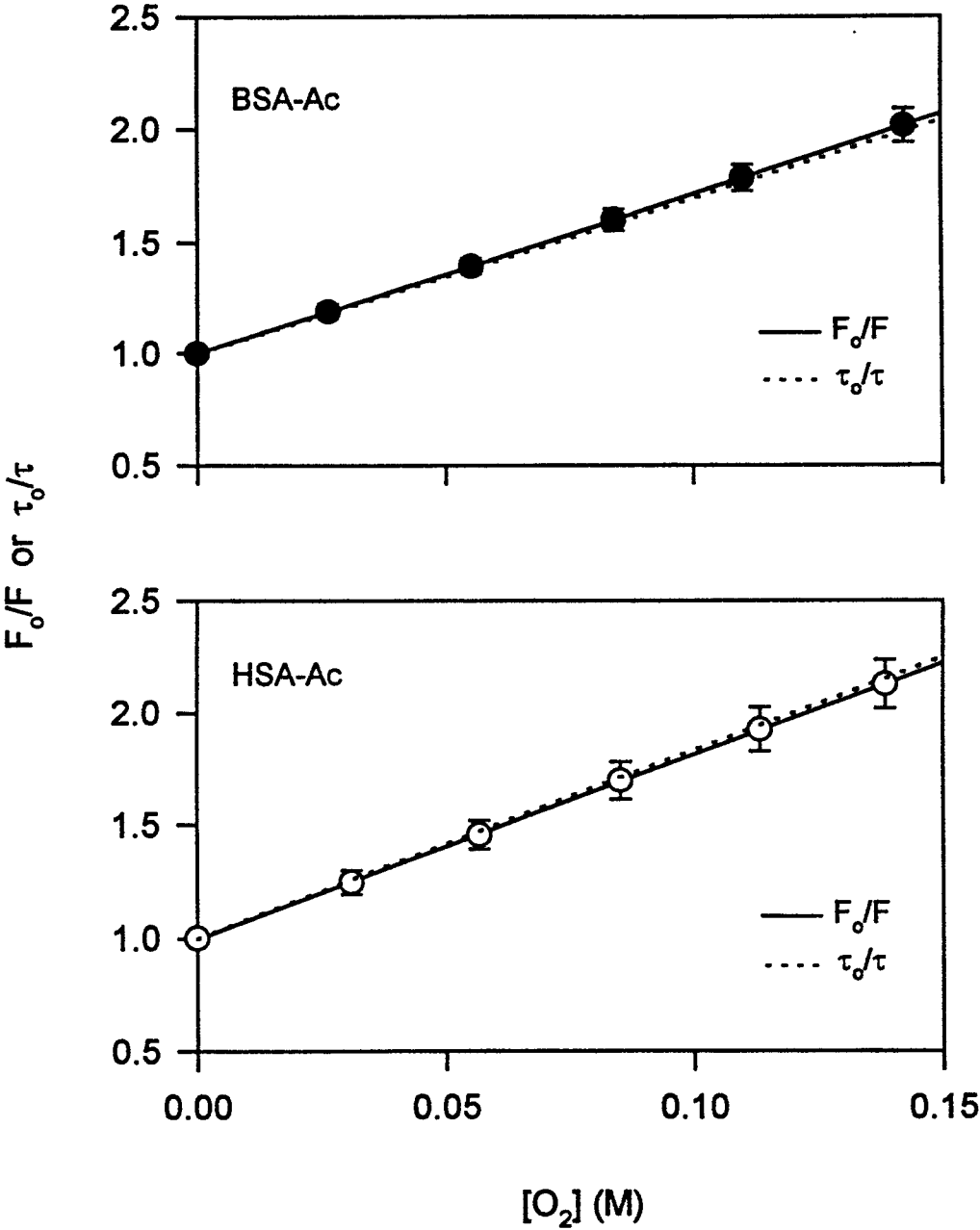
- S1. Lakowicz, J.R.; Cherek, H. *Chem. Phys. Letters* **1985**, *122*, 380-4.
- S2. Lakowicz, J.R.; Hogen, D. *Biochemistry*, **1981**, *20*, 1366-73.

Figure Captions

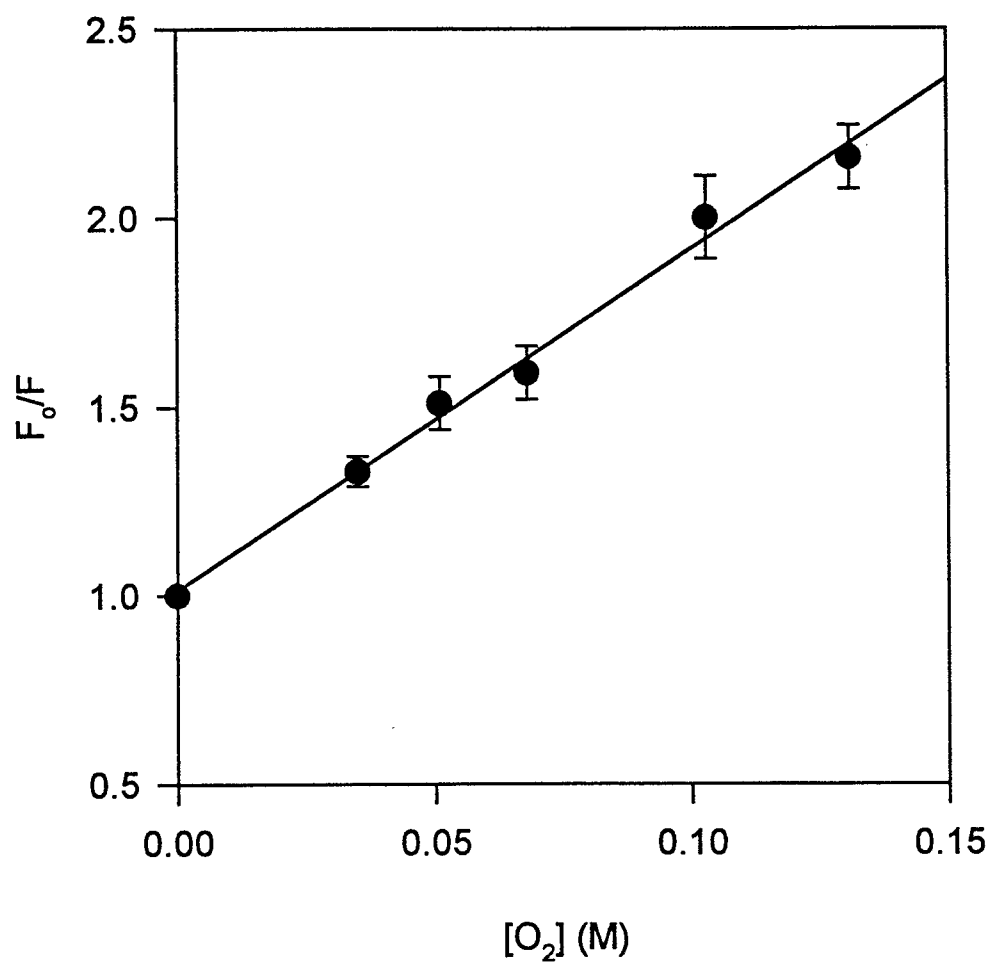
Figure S1. Fluorescence Intensity (—, F_0/F) and lifetime (- - - , τ_0/τ) Stern-Volmer plots for BSA- and HSA-Ac quenched with O_2 .

Figure S2. Stern-Volmer plot for BSA-Ac which is chemically bonded to APTES/glu-modified silica quenched with O_2 .

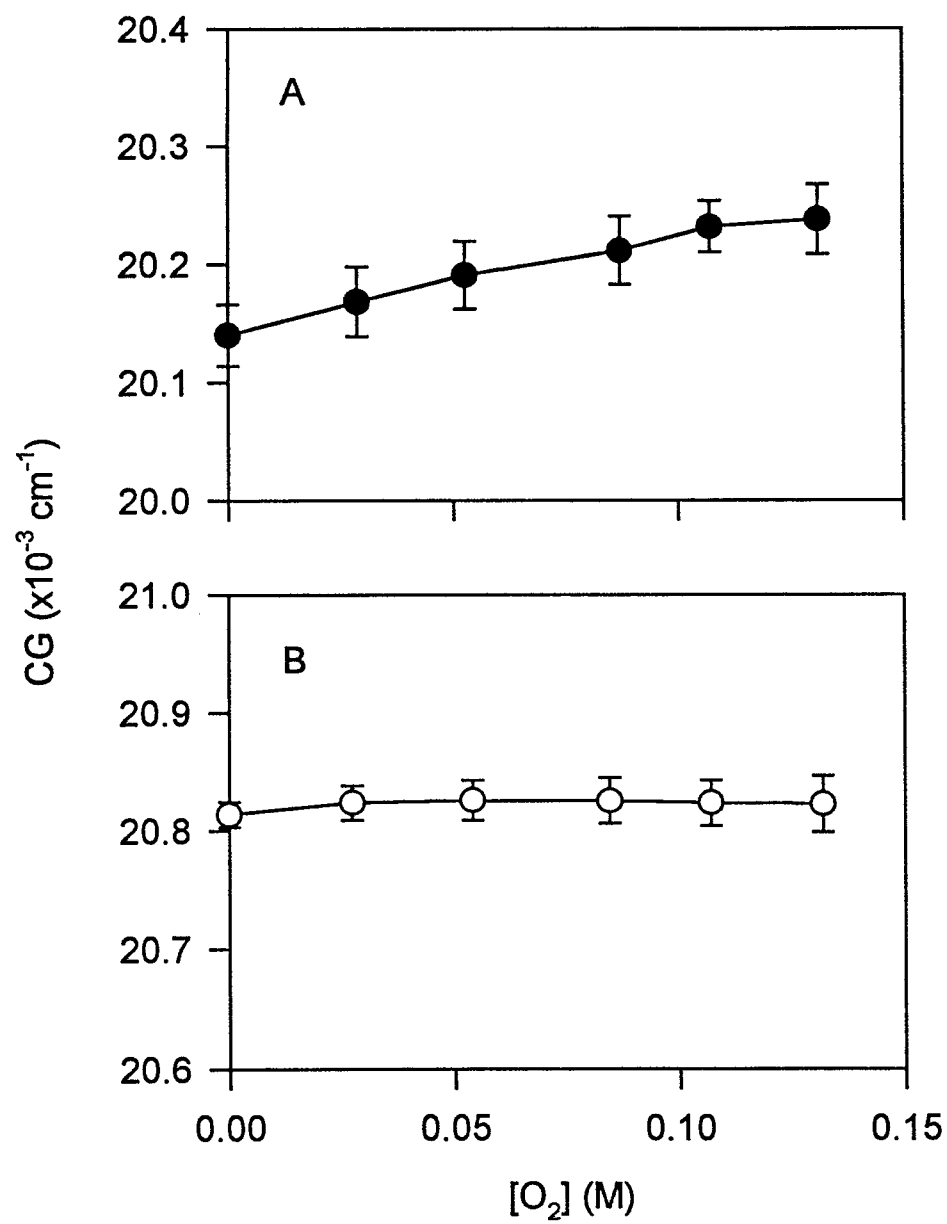
Figure S3. Emission center of gravity as a function of O_2 concentration for BSA-Ac (panel A) and HSA-Ac (panel B) in buffer solution.



Ingersoll et al., Fig. S1



Ingersoll et al., Fig. S2



Ingersoll et al., Fig. S3