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Figure S1 depicts the intensity (F_o/F) and lifetime (τ_o/τ) Stern-Volmer plots for BSA-Ac (top panel) and HSA-Ac (bottom panel). The fact that (F_o/F) and (τ_o/τ) are superimposable and that the relationships are linear demonstrate that dynamic (collisional) quenching alone governs both systems. The slopes (K_{SV} = 7.1 ± 0.3 and 8.2 ± 0.2 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 ± 0.7 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_o/F) and lifetime (- - - -, τ_o/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-

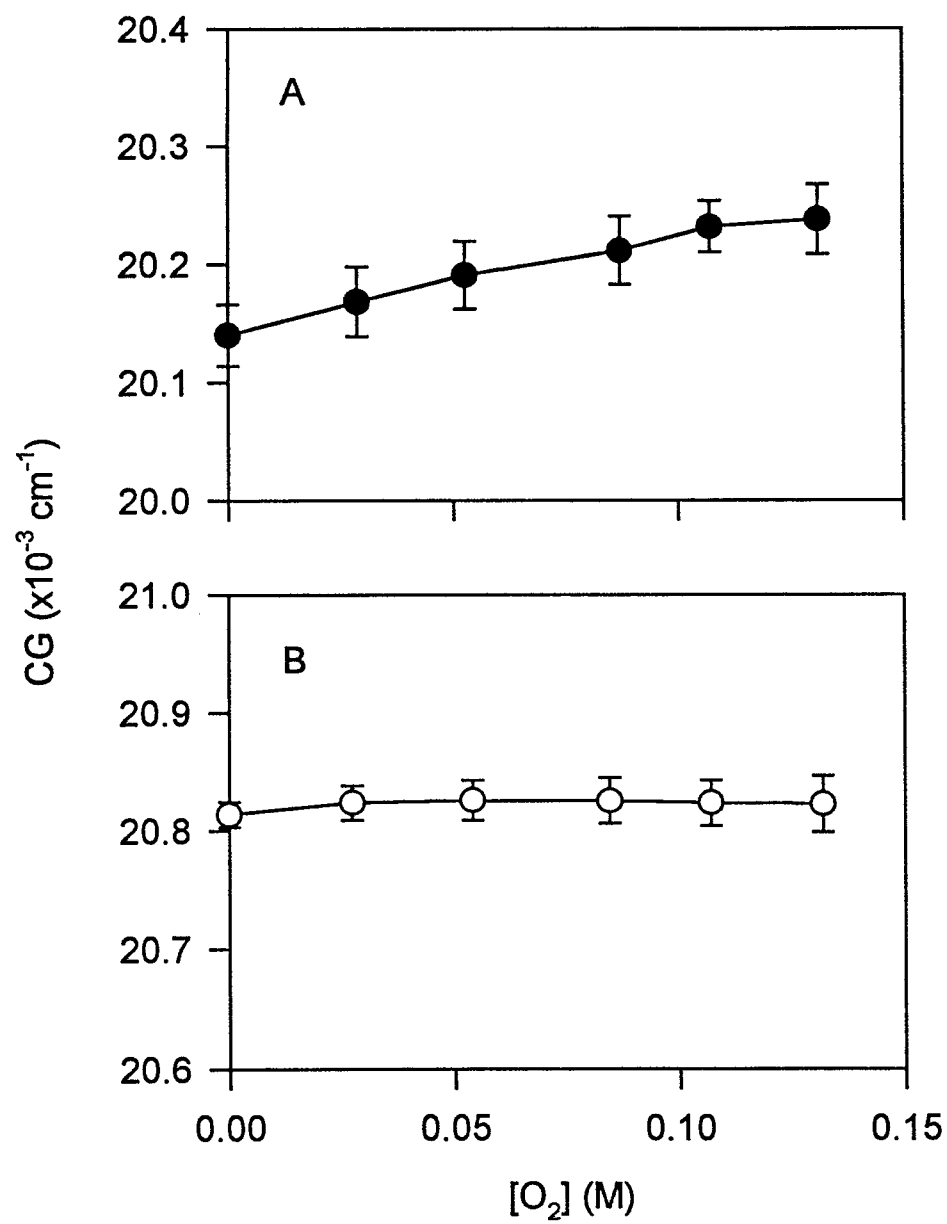modified silica quenched with O_2.

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.
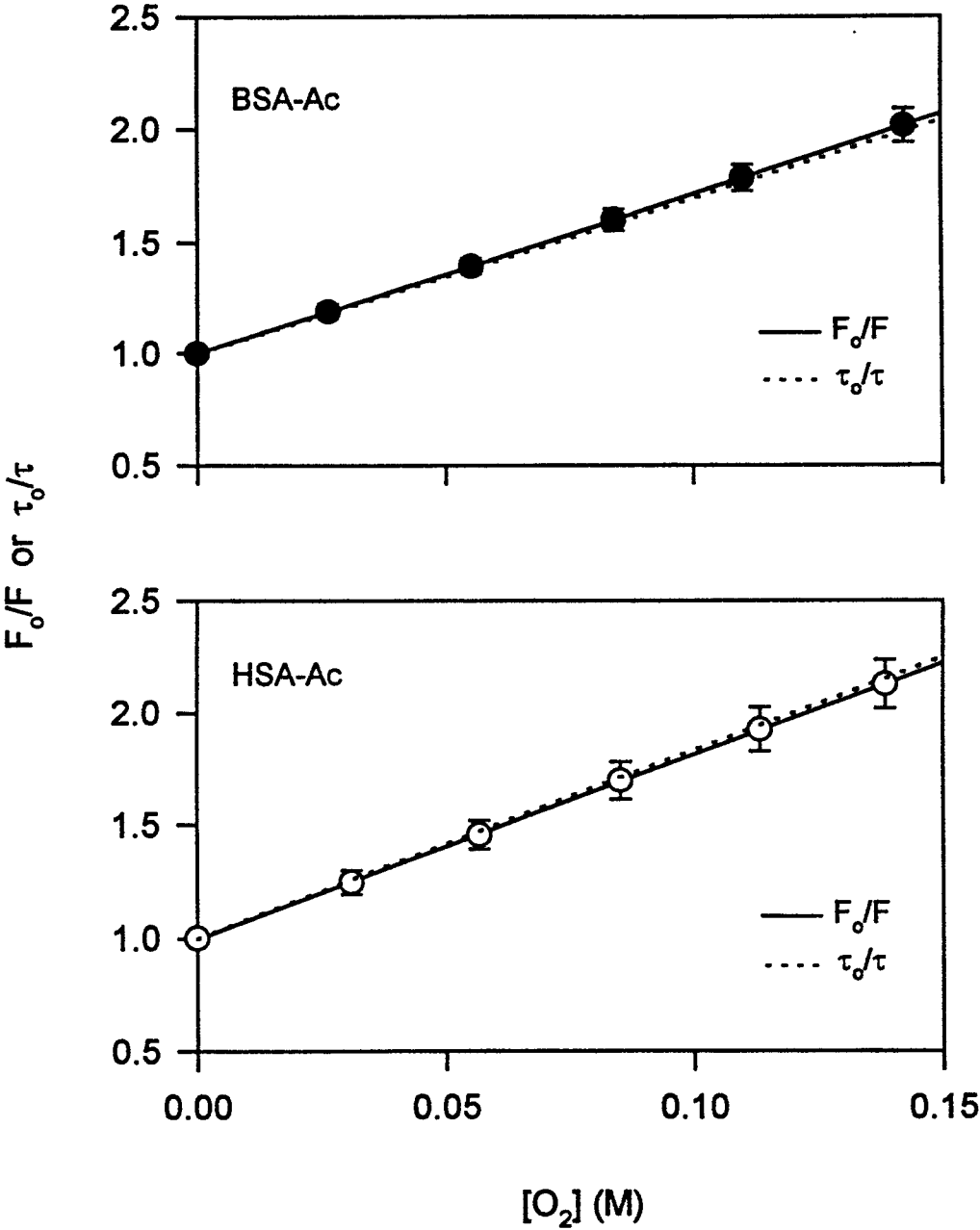
Ingersoll et al., Fig. S1
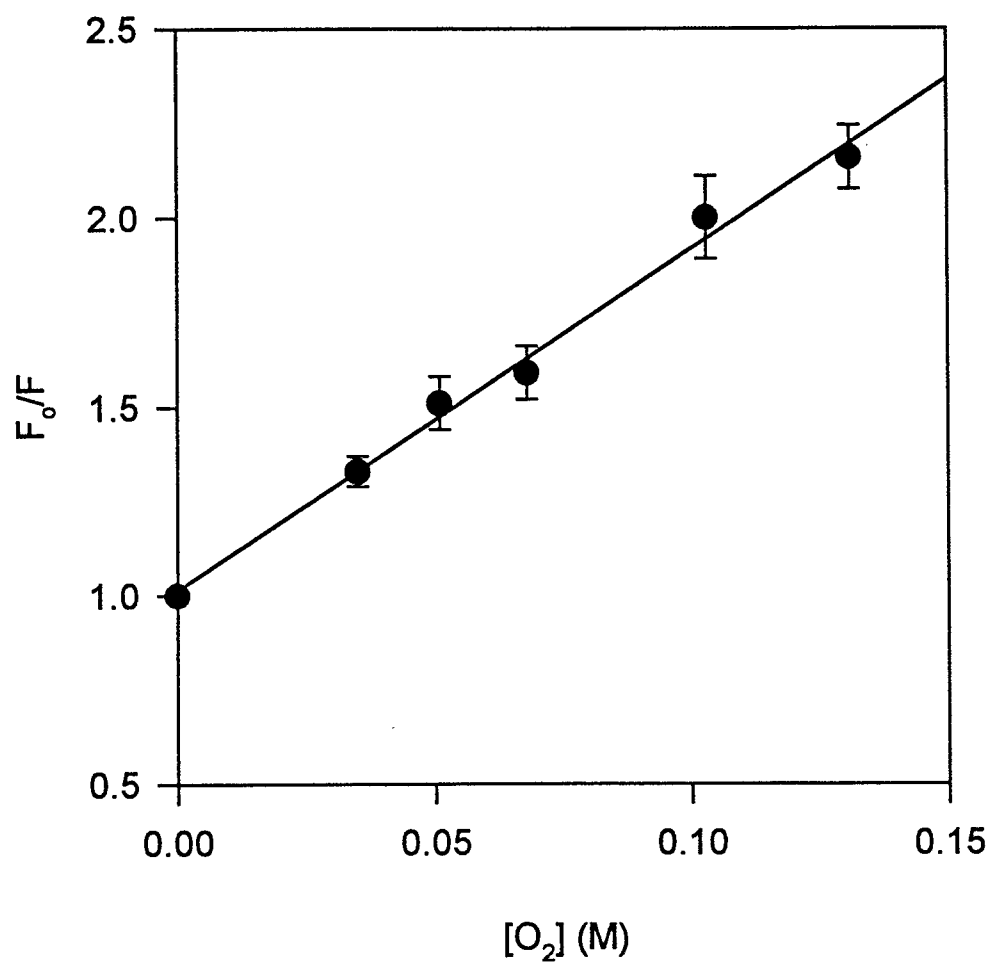
Ingersoll et al., Fig. S2

Ingersoll et al., Fig. S3