Supplementary Data

Direct and Indirect Monitoring of Peptide-Silica Interactions using Time-Resolved Fluorescence Anisotropy

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Supplementary Table 1. Time-resolved fluorescence anisotropy decay data of R6G in 10 mM, pH=7.4 Tris buffer solution and in 0.75 wt % SiO_2 in the presence of varying levels of KWK.[a]

R6G in Ludox					
	0 mM KWK	0.6 mM KWK	1 mM KWK	2 mM KWK	5 mM KWK
τ, *ns*	3.93 ± 0.002	3.87 ± 0.005 (96.5%) 1.94 ± 0.03 (3.5%)	3.89 ± 0.004 (96.4%) 1.91 ± 0.006 (3.6%)	3.87 ± 0.005 (95.4%) 1.91 ± 0.009 (4.6%)	3.82± 0.006 (96.9%) 1.82 ± 0.009 (3.1%)
χ_R^2	1.14	1.09	1.12	1.13	1.10
ϕ_1, *ns*	0.18 ± 0.05	0.17 ± 0.04	0.18 ± 0.03	0.16 ± 0.02	0.19± 0.02
ϕ_2, *ns*	3.9 ± 0.5	3.9 ± 0.3	4.1± 0.4	3.0± 0.4	3.4± 0.5
r_0	0.38	0.38	0.38	0.39	0.38
r_∞	0.26	0.16	0.15	0.10	0.01
g	0.67	0.42	0.37	0.26	0.02
f_1	0.05	0.20	0.24	0.33	0.44
f_2	0.28	0.38	0.39	0.41	0.54
χ_R^2	1.01	0.99	0.99	0.99	1.02

a) τ, fluorescence lifetime; ϕ_1, ϕ_2, rotational correlation times; f_1, fractional contribution to anisotropy decay owing to ϕ_1; f_2, fractional contribution to anisotropy decay owing to ϕ_2; r_0, limiting anisotropy; r_∞, residual anisotropy; g, fraction of fluorescence arising from slow motion of probes corresponding to limiting anisotropy ($g = r_\infty/r_0$). Typical errors in r_∞, r_0, f_1 and f_2 are ± 0.02, error in g is ± 0.03.

Supplementary Table 2. Time-resolved fluorescence anisotropy decay data of R6G in 10 mM, pH=7.4 Tris buffer solution and in 0.75 wt % SiO_2 in the presence of varying levels of Ac-KWK.[a]

	R6G in Ludox					
	0 mM Ac-KWK	0.6 mM Ac-KWK	1 mM Ac-KWK	2 mM Ac-KWK	5 mM Ac-KWK	6 mM Ac-KWK
τ, *ns*	3.93 ± 0.002	3.96 ± 0.005 (93.3%) 1.97 ± 0.01 (6.7%)	3.98 ± 0.004 (93.8%) 1.98 ± 0.008 (6.2%)	3.89 ± 0.004 (93.4%) 1.88 ± 0.01 (6.54%)	3.89 ± 0.005 (92.8%) 1.88 ± 0.02 (7.2%)	3.88 ± 0.005 (94.0%) 1.96 ± 0.01 (6.0%)
χ_R^2	1.14	1.10	1.08	1.11	1.09	1.09
ϕ_1, *ns*	0.18± 0.05	0.21± 0.04	0.20± 0.04	0.16± 0.03	0.20± 0.03	0.19± 0.03
ϕ_2, *ns*	3.9 ± 0.4	4.9 ± 0.8	4.5± 0.6	3.1± 0.7	3.0± 0.7	3.3± 0.9
r_0	0.38	0.39	0.37	0.39	0.40	0.40
r_∞	0.26	0.22	0.22	0.17	0.16	0.12
g	0.67	0.56	0.59	0.44	0.40	0.30
f_1	0.05	0.08	0.10	0.27	0.35	0.43
f_2	0.28	0.36	0.31	0.29	0.25	0.27
χ_R^2	1.01	1.03	1.00	0.99	1.01	1.07

a) Terms are as defined in Table 1.

Supplementary Table 3. Time-resolved fluorescence anisotropy decay data of R6G in 10 mM, pH 7.4 Tris buffer solution and in 0.75 wt % SiO_2 in the presence of varying levels of EWE.[a]

	R6G in Ludox					
	0 mM EWE	0.6 mM EWE	1 mM EWE	2 mM EWE	5 mM EWE	10 mM EWE
τ, *ns*	3.93 ± 0.002	4.03 ± 0.005 (96.4%) 2.02 ± 0.01 (3.6%)	4.01 ± 0.004 (97.0%) 2.01 ± 0.007 (3%)	3.99 ± 0.004 (97.0%) 2.01 ± 0.02 (3%)	3.97 ± 0.005 (96.8%) 1.79 ± 0.008 (3.2%)	3.93 ± 0.004 (95.0%) 1.96 ± 0.007 (5.0%)
χ_R^2	1.14	1.08	1.05	1.07	1.09	1.06
ϕ_1, *ns*	0.18± 0.05	0.18± 0.09	0.16± 0.09	0.19±0.052	0.14± 0.05	0.23± 0.76
ϕ_2, *ns*	3.9 ± 0.4	4.6 ± 0.7	4.5 ± 0.4	4.3± 0.9	4.5 ± 0.9	14.0 ± 7.3
r_0	0.38	0.38	0.40	0.38	0.40	0.36
r_∞	0.26	0.27	0.28	0.25	0.27	0.30
g	0.67	0.71	0.70	0.66	0.68	0.72
f_1	0.05	0.07	0.07	0.08	0.06	0.05
f_2	0.28	0.22	0.23	0.26	0.26	0.23
χ_R^2	1.01	1.03	0.97	1.03	1.04	0.98

a) Terms are as defined in Table 1.

Supplementary Table 4. Time-resolved fluorescence anisotropy decay data of R6G in 10 mM, pH 7.4 Tris buffer solution and in 0.75 wt % SiO_2 in the presence of varying levels of Ac-EWE.[a]

	R6G in Ludox					
	0 mM Ac-EWE	0.6 mM Ac-EWE	1 mM Ac-EWE	2 mM Ac-EWE	5 mM Ac-EWE	10 mM Ac-EWE
τ, *ns*	3.93 ± 0.002	4.00 ± 0.004 (96.7%) 2.00 ± 0.01 (3. 3%)	4.01 ± 0.003 (96.3%) 2.00 ± 0.01 (3.7%)	3.97 ± 0.004 (97.6%) 2.01 ± 0.02 (2.4%)	3.95± 0.001 (96.7%) 1.97 ± 0.01 (3.3%)	3.95 ± 0.006 (95.2%) 1.98 ± 0.01 (4.8%)
χ_R^2	1.14	1.08	1.02	1.05	1.09	1.09
ϕ_1, *ns*	0.18± 0.05	0.21± 0.06	0.18± 0.04	0.19± 0.02	0.19± 0.01	0.17± 0.06
ϕ_2, *ns*	3.9 ± 0.4	4.1 ± 0.5	4.0 ± 0.4	4.9 ± 0.9	5.1 ± 1.3	3.9± 0.3
r_0	0.38	0.37	0.37	0.37	0.38	0.39
r_∞	0.26	0.26	0.24	0.22	0.27	0.26
g	0.67	0.70	0.64	0.61	0.71	0.66
f_1	0.05	0.02	0.02	0.04	0.02	0.05
f_2	0.28	0.28	0.33	0.35	0.27	0.29
χ_R^2	1.01	1.00	0.99	0.97	1.02	1.03

a) Terms are as defined in Table 1.

Supplementary Table 5. Effect of adding R6G and peptides in varying order on TRFA parameters.

	R6G in Ludox		
	A	B	C
τ, *ns*	3.89 ± 0.005 (93.9%) 1.79 ± 0.01 (6.1%)	3.86 ± 0.005 (95.4%) 1.94 ± 0.02 (4.6%)	3.87 ± 0.005 (96.5%) 1.94 ± 0.03 (3.5%)
χ_R^2	1.07	1.10	1.09
ϕ_1, *ns* ϕ_2, *ns*	0.16 ± 0.02 3.3 ± 0.7	0.19 ± 0.04 3.7± 0.4	0.17 ± 0.04 3.9 ± 0.3
r_0	0.40	0.39	0.38
r_∞	0.16	0.16	0.16
g	0.40	0.41	0.42
f_1	0.22	0.20	0.20
f_2	0.38	0.39	0.38
χ_R^2	1.00	1.02	0.99

A. 0.6mM KWK+Ludox, 1h, +R6G
B. R6G +Ludox, 1h, +0.6mM KWK
C. 0.6mM KWK+R6G, 1h, +Ludox