

A promising strategy for improved solubilization of ionic drugs simply by electrostatic pushing

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Electronic Supplementary Information

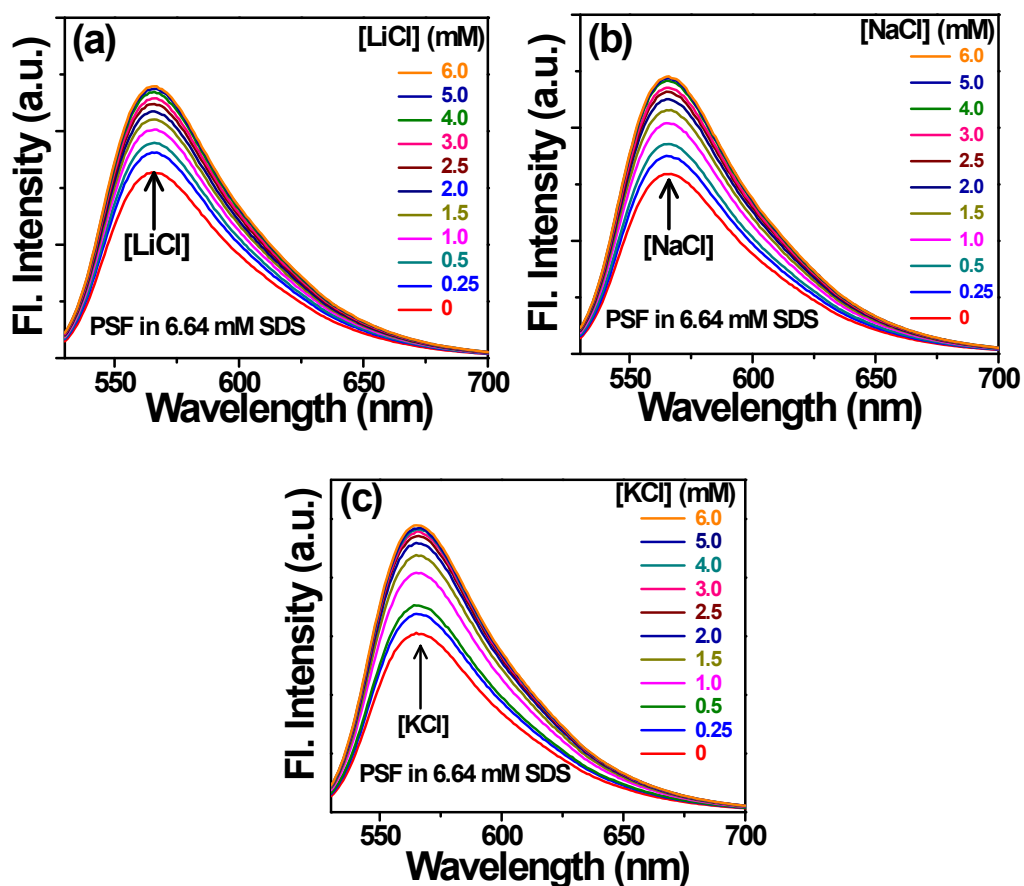


Fig. S1 Fluorescence spectra of PSF in 6.64 mM SDS with the addition of (a) LiCl, (b) NaCl and (c) KCl respectively. Concentrations of the salts are provided in the legends. $\lambda_{\text{exc}} = 520$ nm.

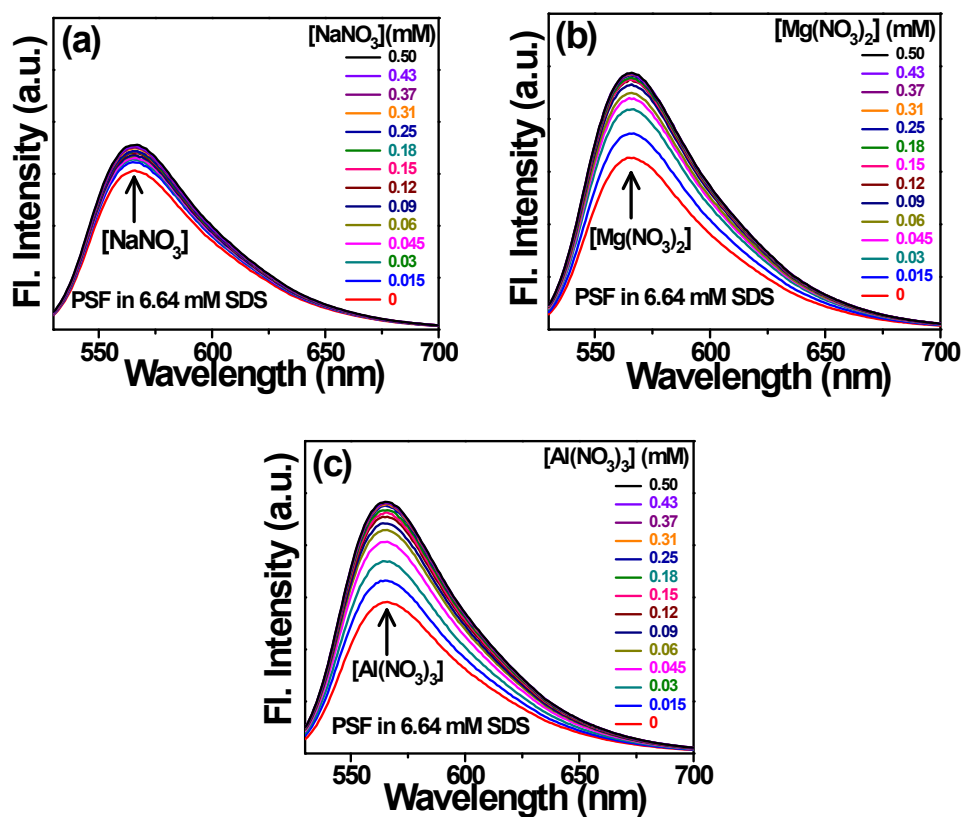


Fig. S2 Fluorescence spectra of PSF in 6.64 mM SDS with the addition of (a) NaNO_3 , (b) $\text{Mg}(\text{NO}_3)_2$ and (c) $\text{Al}(\text{NO}_3)_3$ respectively. Concentrations of the added salts are provided in the legends. $\lambda_{\text{exc}} = 520 \text{ nm}$.

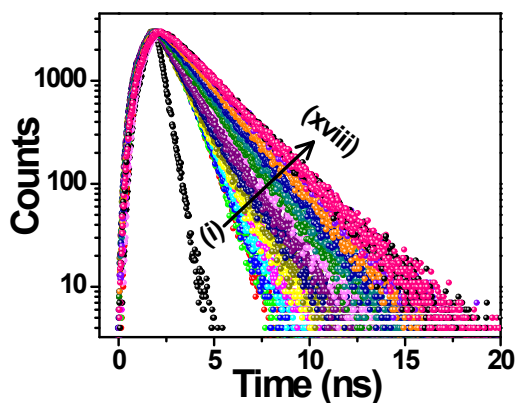


Fig. S3 Time resolved fluorescence decays of PSF with the addition of SDS. Curves (i) \rightarrow (xviii) in correspond to $[\text{SDS}] = 0, 1.0, 2.0, 4.0, 5.0, 5.43, 5.91, 6.40, 6.64, 6.76, 6.89, 7.00, 7.13, 7.37, 8.58, 9.78, 10.98, \text{ and } 13.35 \text{ mM}$ respectively. The sharp profile (black) on the left is the instrument response function (IRF). $[\text{PSF}] = 5 \mu\text{M}$, $\lambda_{\text{exc}} = 490 \text{ nm}$ and $\lambda_{\text{em}} = \lambda_{\text{em}}^{\text{max}}$.

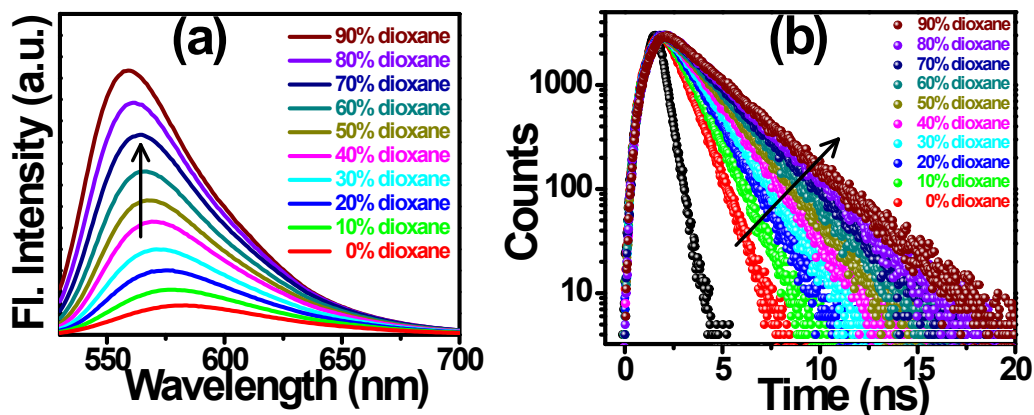


Fig. S4 (a) Steady state fluorescence spectra ($\lambda_{\text{exc}} = 520 \text{ nm}$) and (b) time resolved fluorescence decay profiles ($\lambda_{\text{exc}} = 490 \text{ nm}$ and $\lambda_{\text{em}} = \lambda_{\text{em}}^{\text{max}}$) of PSF in varying compositions of dioxane–water mixtures. Compositions of the water–dioxane mixtures are provided in the legends. The sharp black profile in (b) represents the IRF.

Table S1 Fluorescence lifetime of PSF in SDS solutions of different concentrations

[SDS] (mM)	Lifetime ($\tau \pm 0.05 \text{ ns}$)	χ^2
0	0.88	1.02
1.0	0.92	1.05
2.0	0.96	1.03
4.0	1.03	1.00
5.0	1.09	1.02
5.43	1.12	1.00
5.91	1.22	1.24
6.40	1.32	1.12
6.64	1.41	1.20
6.76	1.55	1.10
6.89	1.68	1.01
7.00	1.82	1.16
7.13	1.89	1.06
7.37	2.03	1.15
8.58	2.21	1.09
9.78	2.24	1.08
10.98	2.28	1.07
13.35	2.30	1.18

Table S2 Fluorescence intensity ($\lambda_{\text{exc}} = 520 \text{ nm}$) and lifetime ($\lambda_{\text{exc}} = 490 \text{ nm}$, $\lambda_{\text{em}} = \lambda_{\text{em}}^{\text{max}}$) of PSF with increasing concentration of LiCl in 6.64 mM SDS solution.

[LiCl] (mM)	Fl. intensity (a.u.)	F/F_0	Lifetime ($\tau \pm 0.05 \text{ ns}$)	τ/τ_0	χ^2
0	4.82	1.00	1.41	1	1.0
0.25	5.43	1.13	1.48	1.05	1.15
0.5	5.69	1.18	1.56	1.11	1.07
1.0	6.05	1.26	1.68	1.19	1.0
1.5	6.31	1.31	1.81	1.28	1.0
2.0	6.53	1.35	1.91	1.35	1.11
2.5	6.72	1.39	2.02	1.43	1.09
3.0	6.87	1.43	2.11	1.50	1.07
4.0	7.04	1.46	2.21	1.57	1.08
5.0	7.11	1.48	2.22	1.57	1.16
6.0	7.18	1.49	2.22	1.57	1.02

Table S3 Fluorescence intensity ($\lambda_{\text{exc}} = 520 \text{ nm}$) and lifetime ($\lambda_{\text{exc}} = 490 \text{ nm}$, $\lambda_{\text{em}} = \lambda_{\text{em}}^{\text{max}}$) of PSF with increasing concentration of NaCl in 6.64 mM SDS solution.

[NaCl] (mM)	Fl. intensity (a.u.)	F/F_0	Lifetime ($\tau \pm 0.05 \text{ ns}$)	τ/τ_0	χ^2
0	4.77	1.0	1.41	1	1.0

0.25	5.26	1.10	1.54	1.09	1.05
0.5	5.56	1.17	1.70	1.21	1.04
1.0	6.12	1.28	1.82	1.29	1.0
1.5	6.47	1.36	1.98	1.40	1.0
2.0	6.76	1.42	2.11	1.50	1.03
2.5	6.95	1.46	2.21	1.57	1.05
3.0	7.06	1.48	2.23	1.58	1.03
4.0	7.24	1.52	2.25	1.60	1.10
5.0	7.31	1.53	2.25	1.60	1.07
6.0	7.36	1.54	2.25	1.60	1.03

Table S4 Fluorescence intensity ($\lambda_{\text{exc}} = 520 \text{ nm}$) and lifetime ($\lambda_{\text{exc}} = 490 \text{ nm}$, $\lambda_{\text{em}} = \lambda_{\text{em}}^{\text{max}}$) of PSF with increasing concentration of KCl in 6.64 mM SDS solution.

[KCl] (mM)	Fl. intensity (a.u.)	F/F_0	Lifetime ($\tau \pm 0.05 \text{ ns}$)	τ/τ_0	χ^2
0	4.55	1	1.40	1	1.03
0.25	5.07	1.11	1.62	1.16	1.04
0.5	5.28	1.16	1.83	1.31	1.03
1.0	6.11	1.34	2.12	1.51	1.15
1.5	6.55	1.44	2.23	1.60	1.02
2.0	6.88	1.51	2.25	1.61	1.10
2.5	7.06	1.55	2.26	1.61	1.05
3.0	7.18	1.58	2.26	1.61	1.10
4.0	7.28	1.60	2.27	1.62	1.0
5.0	7.33	1.61	2.27	1.62	1.0
6.0	7.35	1.62	2.28	1.63	1.03

Table S5 Fluorescence intensity ($\lambda_{\text{exc}} = 520 \text{ nm}$) and lifetime ($\lambda_{\text{exc}} = 490 \text{ nm}$, $\lambda_{\text{em}} = \lambda_{\text{em}}^{\text{max}}$) of PSF with increasing concentration of NaNO_3 in 6.64 mM SDS solution.

[NaNO ₃] (mM)	Fl. intensity (a.u.)	F/F_0	Lifetime ($\tau \pm 0.05$ ns)	τ/τ_0	χ^2
0	4.60	1	1.40	1	1.09
0.015	4.83	1.05	1.55	1.10	1.06
0.03	4.92	1.07	1.61	1.15	1.12
0.045	4.95	1.08	1.64	1.17	1.19
0.06	5.02	1.09	1.66	1.19	1.18
0.09	5.04	1.10	1.66	1.19	1.16
0.12	5.10	1.11	1.65	1.16	1.18
0.15	5.13	1.12	1.67	1.19	1.15
0.18	5.09	1.11	1.66	1.19	1.17
0.25	5.16	1.12	1.70	1.21	1.21
0.31	5.24	1.14	1.71	1.22	1.09
0.37	5.27	1.14	1.72	1.23	1.19
0.43	5.30	1.15	1.72	1.21	1.17
0.50	5.33	1.16	1.72	1.23	1.18

Table S6 Fluorescence intensity ($\lambda_{\text{exc}} = 520$ nm) and lifetime ($\lambda_{\text{exc}} = 490$ nm, $\lambda_{\text{em}} = \lambda_{\text{em}}^{\text{max}}$) of PSF with increasing concentration of Mg(NO₃)₂ in 6.64 mM SDS solution.

[Mg(NO ₃) ₂] (mM)	Fl. intensity (a.u.)	F/F_0	Lifetime ($\tau \pm 0.05$ ns)	τ/τ_0	χ^2
0	4.85	1	1.41	1	1.15
0.015	5.58	1.15	1.65	1.17	1.20
0.03	6.28	1.30	1.78	1.26	1.09
0.045	6.57	1.35	1.89	1.34	1.06
0.06	6.74	1.40	2.0	1.42	1.03
0.09	6.99	1.44	2.11	1.50	1.15
0.12	7.12	1.47	2.14	1.52	1.09
0.15	7.14	1.47	2.19	1.55	1.15
0.18	7.17	1.48	2.20	1.56	1.03
0.25	7.23	1.50	2.21	1.57	1.06
0.37	7.29	1.50	2.22	1.57	1.06
0.43	7.31	1.51	2.22	1.57	1.05
0.31	7.26	1.50	2.21	1.57	1.02
0.50	7.31	1.51	2.21	1.57	1.09

Table S7 Fluorescence intensity ($\lambda_{\text{exc}} = 520$ nm) and lifetime ($\lambda_{\text{exc}} = 490$ nm, $\lambda_{\text{em}} = \lambda_{\text{em}}^{\text{max}}$) of PSF with increasing concentration of Al(NO₃)₃ in 6.64 mM SDS solution.

[Al(NO ₃) ₃] (mM)	Fl. intensity (a.u.)	F/F_0	Lifetime ($\tau \pm 0.05$ ns)	τ/τ_0	χ^2
0	4.35	1	1.42	1	1.15
0.015	4.98	1.14	1.73	1.22	1.20
0.03	5.54	1.27	1.84	1.30	1.09
0.045	6.09	1.40	1.95	1.37	1.06
0.06	6.45	1.48	2.08	1.46	1.03
0.09	6.62	1.52	2.18	1.54	1.15
0.12	6.87	1.56	2.22	1.56	1.09
0.15	6.94	1.60	2.23	1.57	1.15
0.18	7.00	1.61	2.25	1.58	1.03
0.25	7.14	1.64	2.26	1.59	1.06
0.37	7.20	1.66	2.27	1.60	1.06
0.43	7.24	1.66	2.28	1.61	1.05
0.31	7.18	1.65	2.26	1.59	1.02
0.50	7.25	1.67	2.27	1.60	1.09