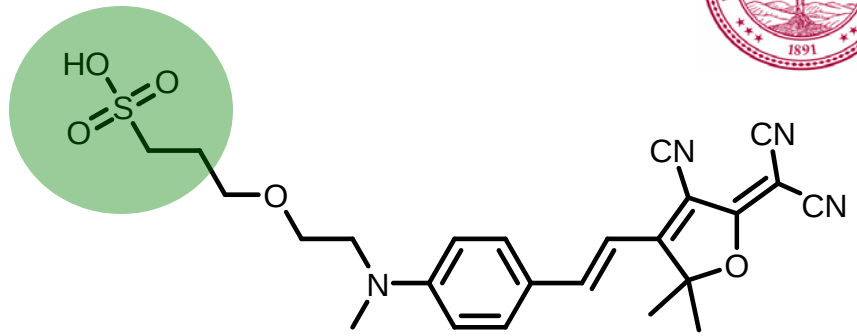
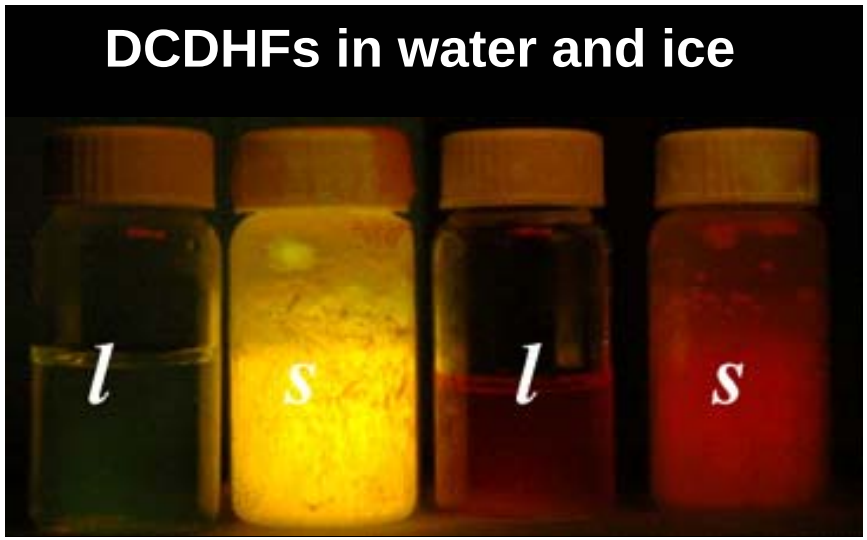
Water-Soluble DCDHF Single-Molecule Fluorophores



Adding groups (e.g. sulfonic acid, carboxylic acid, alcohol) improves water solubility without compromising desirable photophysical properties, permitting more applications of DCDHFs in biological systems.



		λ_{max}	λ_{em}	Φ_F (water)	ε_{max} ($Lcm^{-1}mol^{-1}$)	Solubility in water (ppm)
I	**1**	470[a]	546	0.012	89,900	<0.001
	12	500	–	–	15,100	0.40
	14	496[a]	531	0.002	44,200	1.40
	15	493	528	0.001	64,700	1.50×10^2
	16	501	–	–	37,300	3.80
	17	489	529	0.002	31,500	2.80×10^3
	19	500	517	0.001	79,300	$>2\times10^4$
	21	496	–	–	65,800	$>2\times10^4$
	26	477	517	0.001	57,300	7.30×10^2
	27	476	–	–	42,700	4.70×10^2
II	**2**	560[a]	642	0.002	13,500	<0.001
	6	535[a]	646	0.002	77,900	~0.05
	9	587	–	–	87,200	~0.01
	24	585	639	0.01	37,000	$>2\times10^4$

a: Small volume of ethanol stock solution added to cuvette of water.

Wang; Lu; Lord; Moerner; Twieg. *Tet. Lett.* **2007,** *48,* 3471-3474.