

Synthesis of (2-quinolyl)aryls for environment-sensitive fluorescent probes

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We aim at development of novel environment-sensitive dyes including voltage-sensitive dyes. We prepared the quinolyl aryl scaffolds by Pfitzinger quinoline synthesis. The π -conjugated system was elongated by Sonogashira coupling reaction with 4-ethynyl-*N,N*-dimethylaniline (**1**) or 4-ethynylpyridine hydrochloride (**3**) to yield **1** or **3**. Methylation of the pyridine moiety of **1** and **3** by iodomethane gave amphiphilic dyes **2** and **4**, respectively (**Figure 1a**).

1 and **3** showed the fluorescence maxima at 481 and 470 nm in hexane, and at 681 and 604 nm in THF, respectively, indicating that **1** and **3** have strong fluorescence solvatochromism (**Figure 1b**). The fluorescence spectra of the amphiphilic dyes **2** and **4** reflected voltage changes across the liposomal membranes. In this presentation, we will discuss the photophysical properties of these dyes.

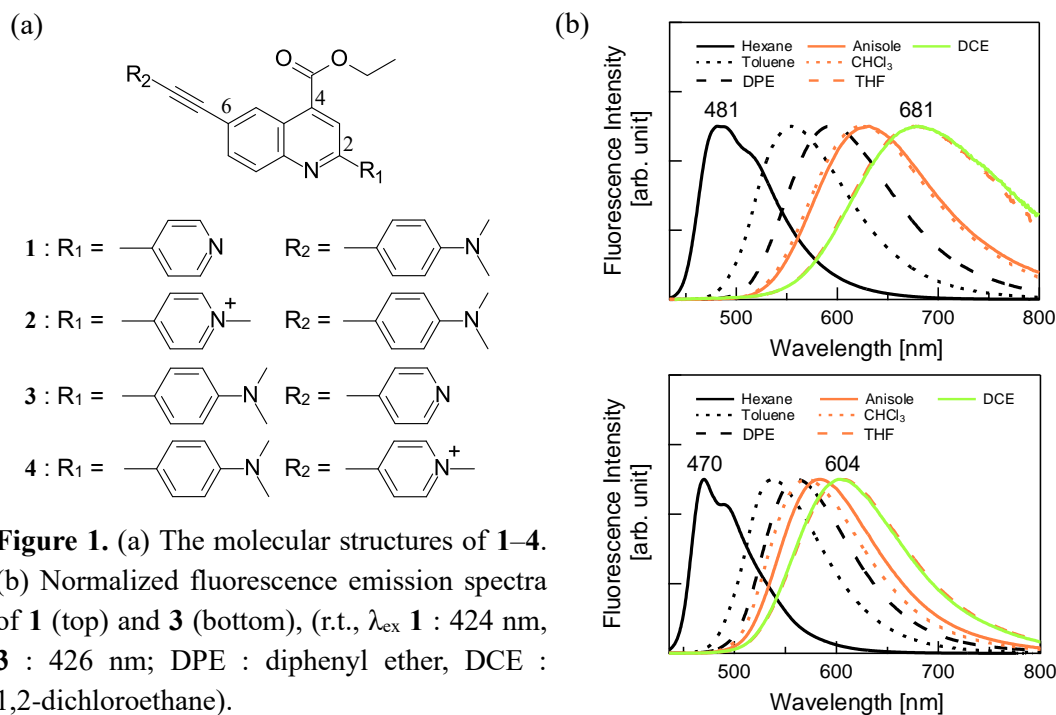


Figure 1. (a) The molecular structures of **1–4**. (b) Normalized fluorescence emission spectra of **1** (top) and **3** (bottom), (r.t., λ_{ex} **1** : 424 nm, **3** : 426 nm; DPE : diphenyl ether, DCE : 1,2-dichloroethane).