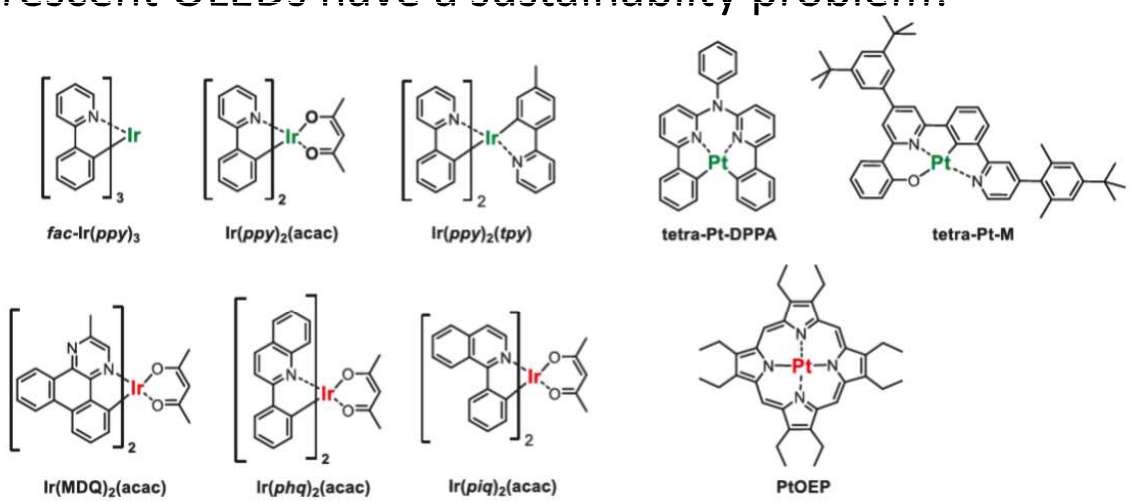
Biologically Inspired Organic Light Emitting Materials (BiOLEMs)

- OLEDs became over the last years the technology of choice for small displays
- Classic Phosphorescent OLEDs have a sustainabilty problem!

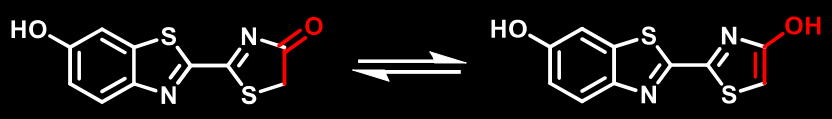


- Current Research[1] indicates that these are not only toxic but also bioaccumulate in fish

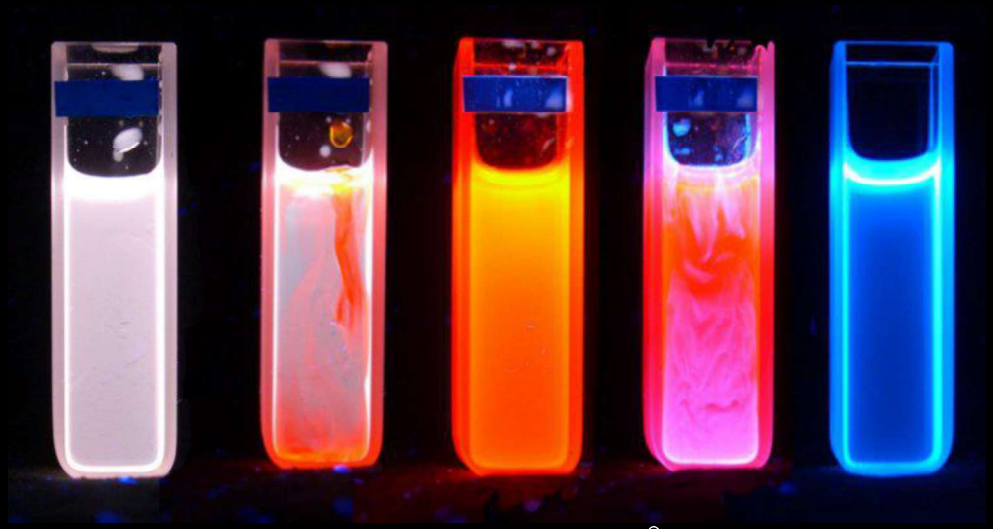
[1] J. Wang, J. Nan, M. Li, G. Yuan, Y. Zhao, J. Dai, K. Zhang, *Environmental Science & Technology Letters* 2022, *9*, 739-746.

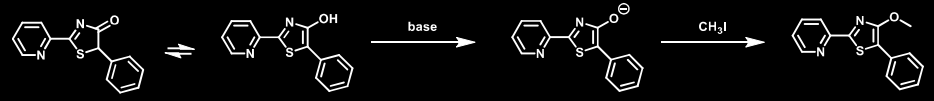
4-Hydroxythiazoles inspired by Firefly Luciferne

Firefly:

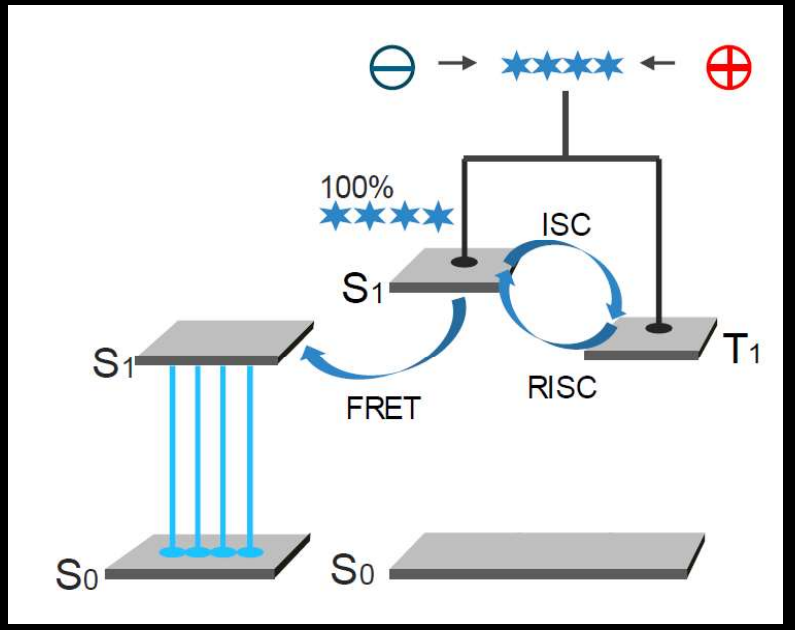


Bio-inspired Emitters:



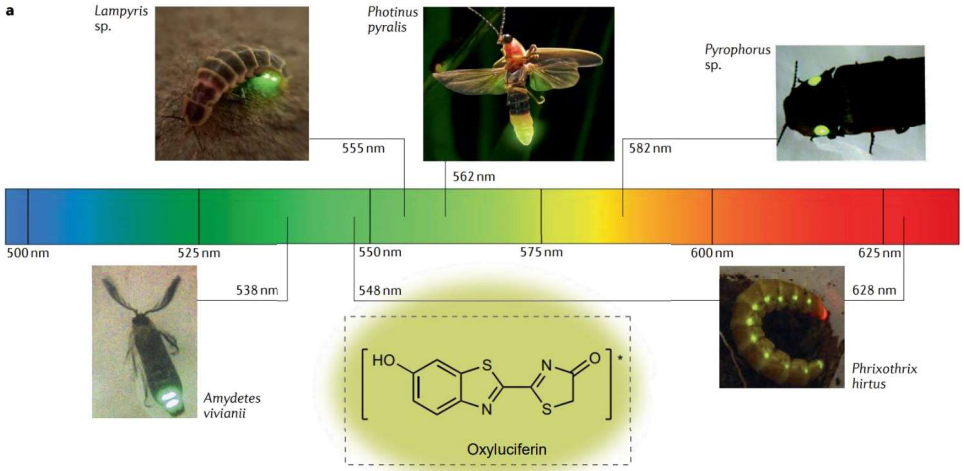


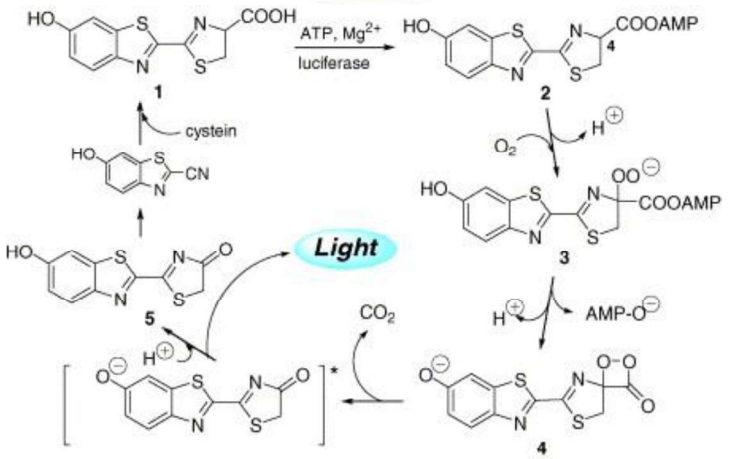
Combination with innovative OLED Stack Designs



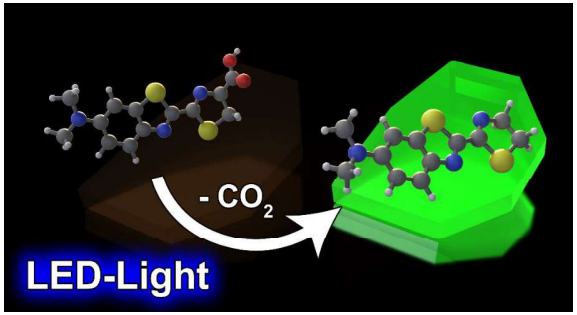
Hyperfluorescence

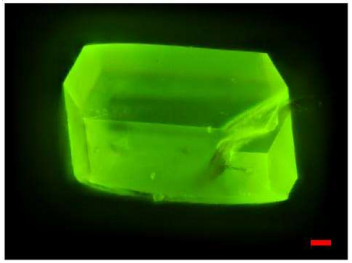
How does Nature solves this challange?

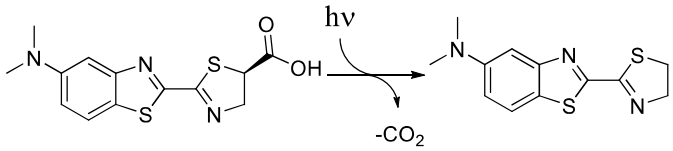




C. Carrasco-López, N. M. Lui, **S. Schramm**, P. Naumov, *Nature Reviews Chemistry* **2021**, *5*, 4-20.
Marieh B. Al-Handawi, **S. Schramm** et.al, Chem. Rev. **2022**, 122, 16, 13207–13234







S. Schramm, et.al. *Angewandte Chemie International Edition* **2018**, *57*, 9538-9542.

2.) Synthesis and photoluminescence study of 2-Aryl-thiazolines