Araki LAB.

[When molecules are assembled ...]

Department of Materials and Environmental Science

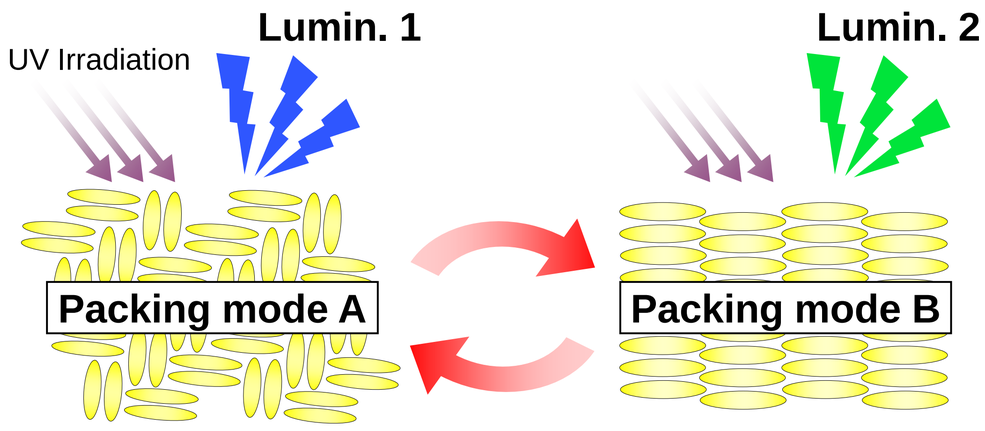
http://www.iis.u-tokyo.ac.jp/~yoshika/arakihome.html

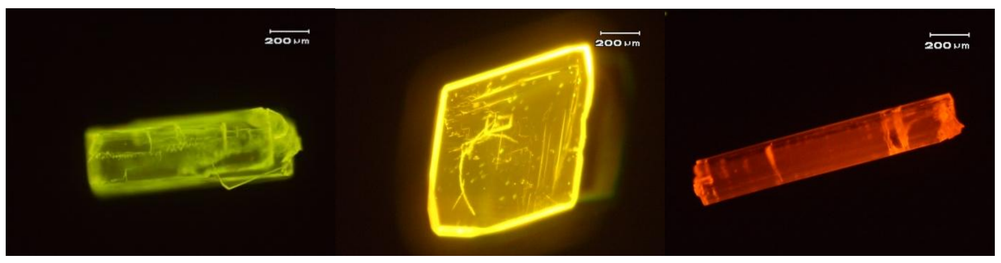
Functional Organic Materials Chemistry

Department of Chemistry and Biotechnology

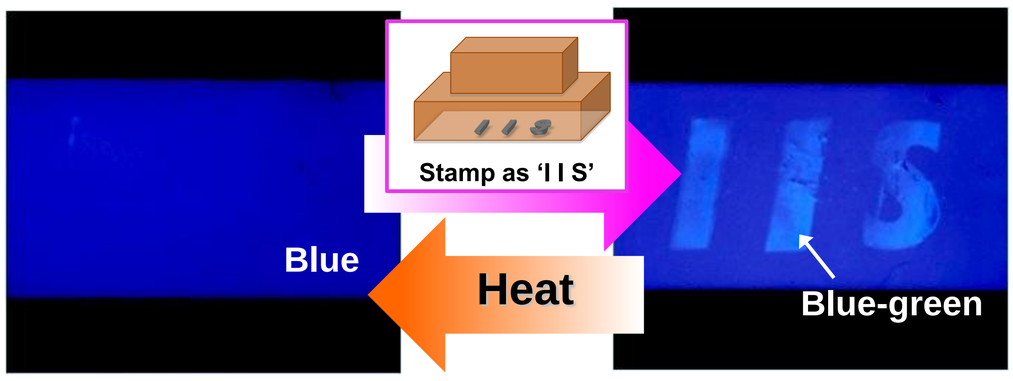
Organic Supramolecular Luminescent Materials

We have fabricated organic materials that display solid-state luminescence characteristic of the packing mode of molecules, which are called 'organic supramolecular luminescent materials'. Furthermore, we realized novel materials that are switchable and tunable their solid-state luminescence properties by controlling the mode of molecular packing without chemical alteration of the molecules.





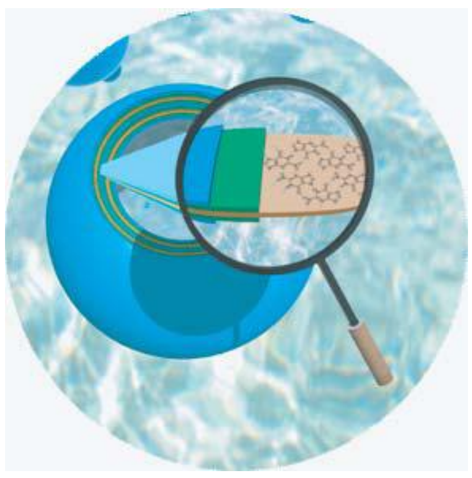
Luminescence of supramolecules – the same molecule, different packing mode.



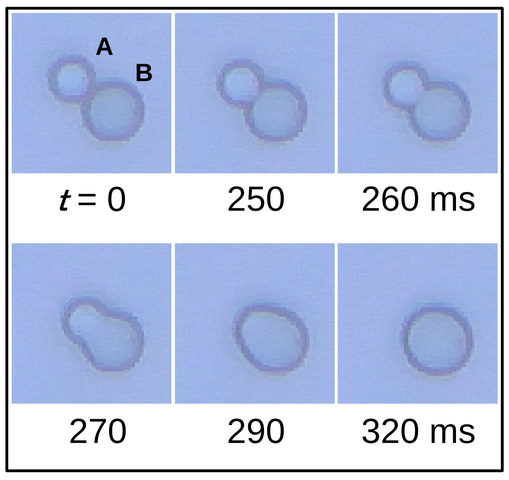
Pressure-responsive supramolecular luminescent material

Hydrogen-Bond-Directed Supramolecular Micro Capsule

An appropriate molecular design of nucleic acids realized formation of 2D hydrogen-bond network in aqueous media, which further led to fabrication of a micrometer-sized giant vesicle. Promising properties of these hydrogen-bond-directed supramolecular vesicles are high stability due to assistance of hydrogen-bonding, and fusion behavior induced by a specific stimulus.



Hydrogen-bond-directed micro capsule



Fusion of micro capsules