

# Tight Electronic Coupling within Loosely Held Polyaromatic Cavities: Tris(*N*-Salicylideneaniline)-Derived Ligands and Receptors

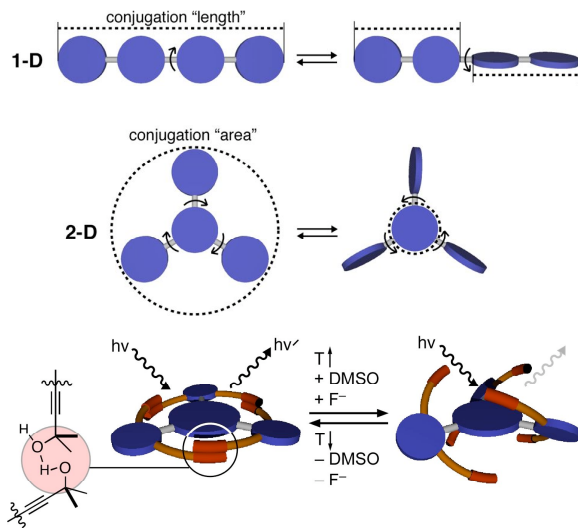
Dongwhan Lee

Department of Chemistry, Indiana University Bloomington

[dongwhan@indiana.edu](mailto:dongwhan@indiana.edu)

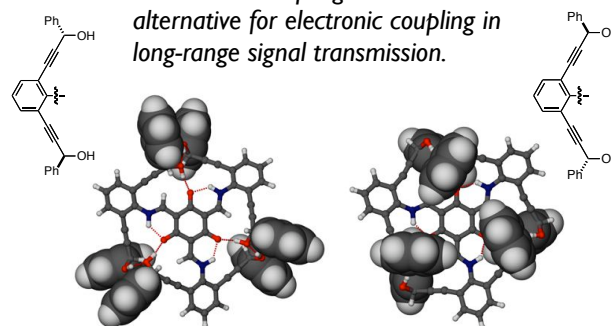
## Dynamic 2-D Conjugation

Structural distortion of planar conjugated systems can modify the effective conjugation "area" sampled by electrons and excitons.



## Long Range Conformational Transmission

Mechanical coupling is a viable alternative for electronic coupling in long-range signal transmission.



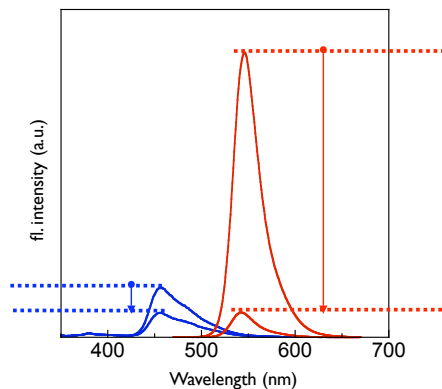
Global helicity predetermined by local chirality residing on 2' alcohol groups.

## Signal-Amplifying "Inverted Antenna"

The orientation-dependent resonance energy transfer (RET) can be exploited as a powerful signal amplification mechanism.

$$k_{\text{RET}} \propto \Phi_D \left[ \frac{\kappa^2}{\tau_D R_{\text{DA}}^6} \right] \int_0^\infty F_D(\lambda) \varepsilon_A(\lambda) \lambda^4 d\lambda$$

$$k_{\text{RET}} \propto K \exp\left(-\frac{2R_{\text{DA}}}{L}\right) J(\lambda)$$



## Allosteric Switching

Artificial systems displaying self-regulatory properties continue to remain an engaging challenge.

