

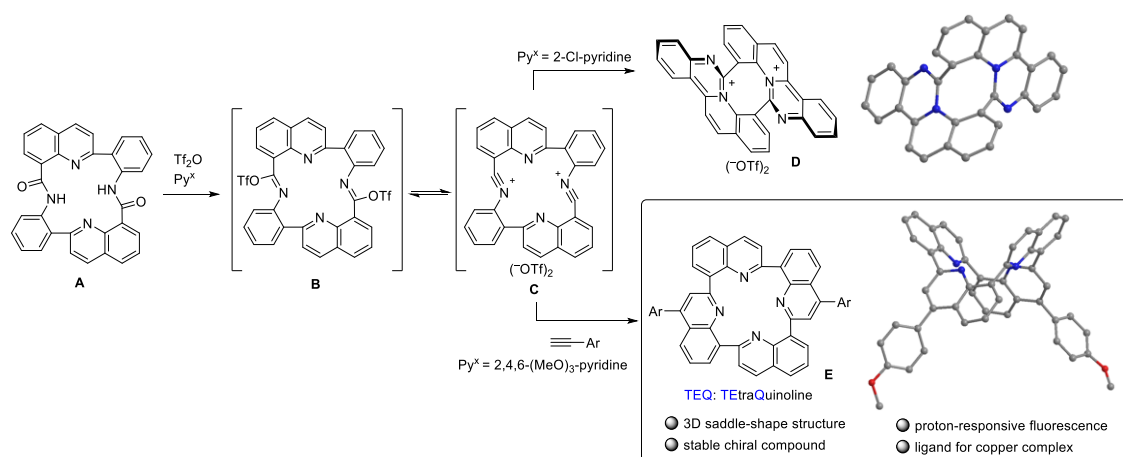
Design, Synthesis, and Properties of TEtraQuinoline (TEQ)

(Institute of Microbial Chemistry) OWei Xu, Naoya Kumagai

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Quinoline is a nitrogen-embedded 10π aromatic planar unit which can be potentially used to build higher order functional molecular architectures. Recently, our group synthesized a novel quasi-flat head-to-tail quinoline trimer TriQuinoline (TQ), which displays unexpected unusual physical and chemical properties. Herein, we endeavored to construct a new and non-flat chiral quinoline tetramer, TEtraQuinoline (TEQ), which was indeed synthesized from the dimer of quinoline-amide **A** and an alkyne in the presence of Tf_2O and 2,4,6-(MeO) $_3$ -pyridine. In addition, dimeric DiazaChrysene (dDC) **D** was also obtained when 2-Cl-pyridine was employed as base. DFT calculations are in line with the differential reaction outcomes depending on the conditions employed.

TEtraQuinoline (TEQ) has a unique saddle-shape structure and the calculated flipping energy barrier was very high (53.8 kcal/mol), which was experimentally supported by no erosion of enantiomeric integrity even at 240 °C in 20 h. It also displays intriguing chemical and physical properties e.g. proton-responsive fluorescence. The synthesis of TEQ/metal complexes and their catalytic properties will be also discussed.



1) S. Adachi, M. Shibasaki, N. Kumagai, *Nat. Commun.* **2019**, *10*, 3820.