

A Figure-of-Eight Molecular Shuttle

Category

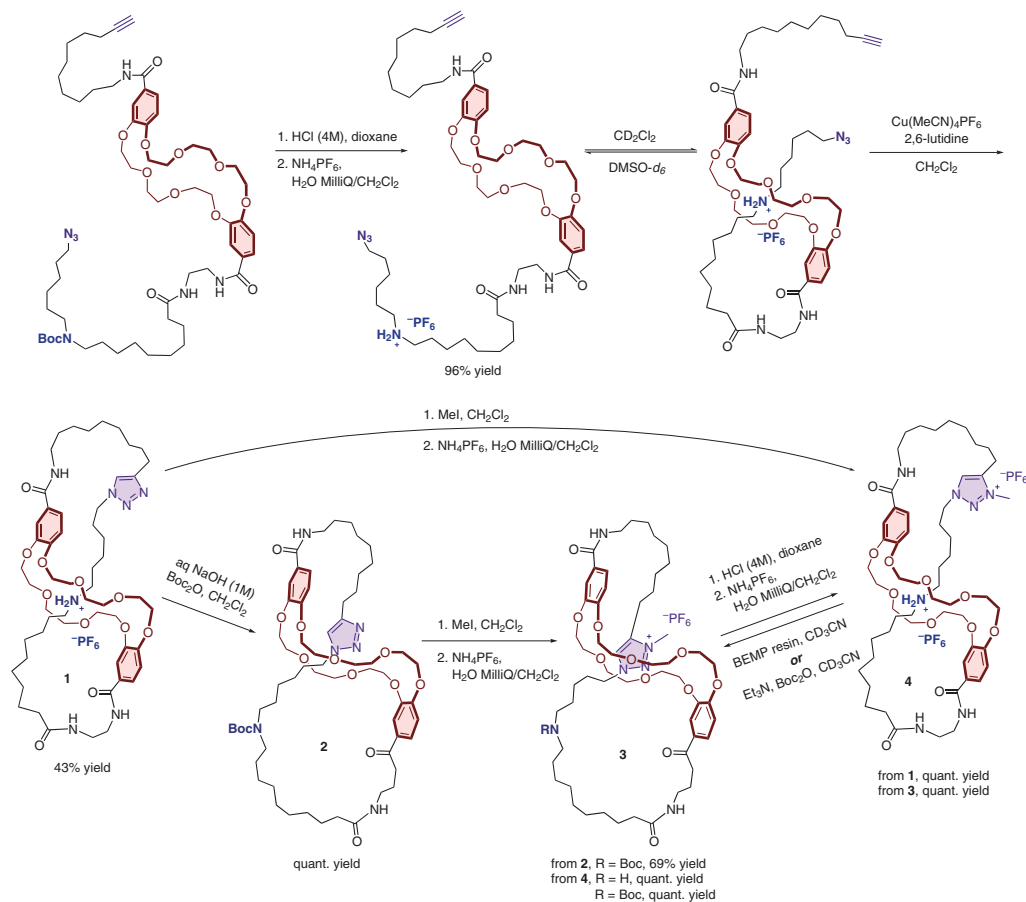
Synthesis of
Materials and
Unnatural Products

Key words

rotaxane
molecular shuttle
pH-responsive
molecular loops

Synfact
of the
Month

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Significance: The paper reports an interlocking figure-of-eight (Fo8) rotaxane molecular shuttle. The two ends of a chain molecule hosting two recognition sites (ammonium and *N*-methyltriazolium) are joined by a crown ether, which is threaded through by the chain, thereby realizing the Fo8 configuration and interdependent expansion and contraction of the two loops.

Comment: The authors devise a novel method for synthesizing the Fo8 rotaxane. Two flexible arms, appended to a crown ether, are preorganized to react and cyclize after being threaded through the central macrocycle. The design of two recognition sites in the thread grants the molecule dual chemoresponsive capabilities.