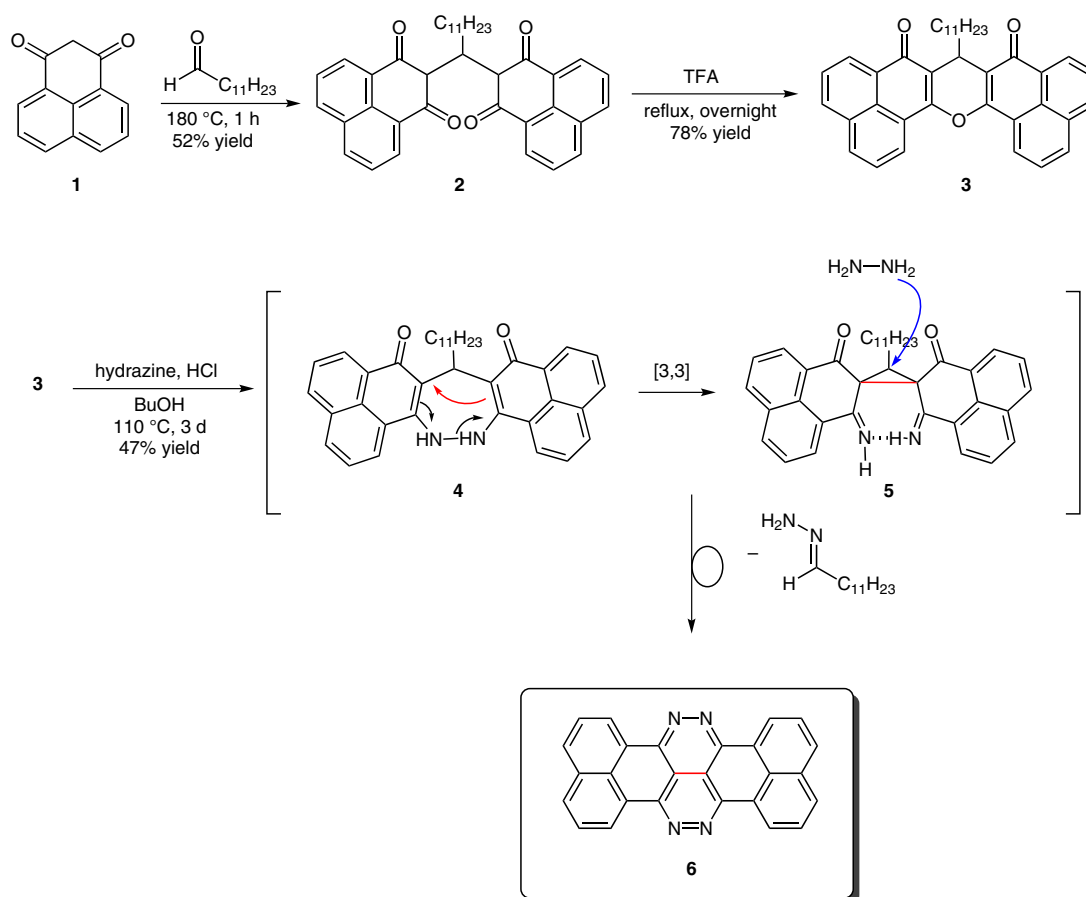


7,8,15,16-Tetraazaterrylene. It's as Simple as One, Two, Three



Significance: Perylene derivatives find applications in organic electronics as electron-transport materials. Now, a facile three-step synthesis of 7,8,15,16-tetraazaterrylene opens the door for higher rylene derivatives which have not been studied as extensively. Knoevenagel condensation of phenalene-1,3-dione (**1**) with lauric aldehyde is followed by a Michael addition of a second molecule of **1** to give **2**. This is heated in neat trifluoroacetic acid effecting the cyclodehydration to **3**.

Comment: The last step is a domino reaction with hydrazine that produces tetraazaterrylene **6** while the solubilizing alkyl chain is expelled as a hydrazone. A mechanism for the domino reaction has been proposed by Tu (*Org. Biomol. Chem.* **2009**, *7*, 1171) and involves formation of diazepine **4** which would undergo a 3,3-sigmatropic rearrangement to form the transannular C–C bond (red). The use of a long-chain aliphatic aldehyde is deliberate – it ensures solubility of **2** and **3** and favors the formation of the tetraaza-product **6**.