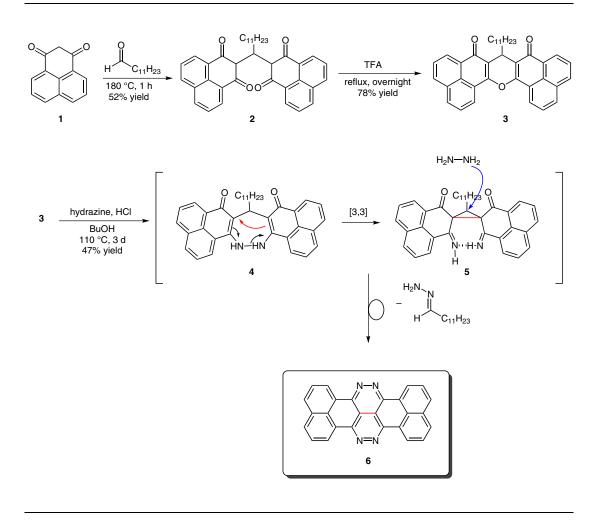
7,8,15,16-Tetraazaterrylene. It's as Simple as One, Two, Three



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 rylenes 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**.

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