Synthesis of tetrabenzo[8]circulene

Over the past year a number of synthetic approaches towards the core structure of [8]circulene have been developed. Our synthetic strategy revolves around a Diels–Alder reaction and a palladium-catalyzed arylation reaction to provide a highly stabilized tetrabenzo[8]circulene structure. Crystal packing forces in the solid-state structure of the parent molecule introduce a unique pinwheel-like conformation (A) in contrast to the predicted saddle-shaped structure (B) [figure1] derived from DFT calculations – leading away from a proposed columnar stacking motif and towards a more complex 3-dimensional packing arrangement. Employing our synthetic strategy developed for tetrabenzo[8]circulene, new functionalized derivatives of this structure have been developed. These advancements, among other recent synthetic developments will be presented.