A Phenyl-Ethynyl-Macrocycle: A Model Compound for ”Geländer” Oligomers Comprising Reactive Conjugated Banisters

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Author(s) Bannwart, Linda Maria; Jundt, Lukas; Müntener, Thomas; Neuburger, Markus; Häussinger, Daniel; Mayor, Marcel
Author(s) at UniBasel Mayor, Marcel ; Bannwart, Linda Maria ; Müntener, Thomas ; Neuburger, Markus ; Häussinger, Daniel ;
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Macrocycle 1 is assembled as smallest member of a series of “Geländer” oligomers with a conjugated banister comprising exclusively sp2 and sphybridized carbon atoms. The synthesis of 1 is based on an acetylene scaffolding approach, comprising Sonogashira crosscoupling reactions in combination with protection group strategies and a final cyclization based on an oxidative acetylene coupling using EglintonBreslow reaction conditions. Macrocycle 1 serves as model compound for the investigation of the structural integrity of the strained 1,3diyne subunit. An enhanced reactivity of the strained 1,3diyne subunit is documented by its engagement in Huisgen’s (2+3) cycloaddition when exposed to an azide at elevated temperature. Both structures, macrocycle 1 and cycloadditionproduct 2, are fully characterized including their solidstate structure obtained by Xray diffraction analysis.
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