Synthesis of a Tetracyclic Derivative of Norbornane

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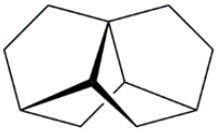
One of the challenges of synthetic organic chemistry is structural diversity, in particular, at the level of small molecular building blocks.[1] New compounds and compound classes in the size range of small molecules (less than 500 g/mol) are of interest since they may display unforeseen properties and lead to new structural motifs.[2] The computer-assisted enumeration of the chemical space addresses this challenge by generating all possible molecules for a give number of atoms (excluding hydrogen) under consideration of specific rules.[3] One particular example found in the chemical universe database (GDB-11) is the yet unknown tetracyclic hydrocarbon **1**. This esthetically pleasing, *C*2-symmetrical, chiral molecule is comprised of three partially superposed norbornyl units. It is surprising that this unstrained molecule has not yet been synthesized in over 100 years of norbornane chemistry.[4] The goal of this project is to synthesize and study the properties of hydrocarbon **1**. The total synthesis of this compound will be presented in the presentation.



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[1] L. C. Blum, J.-L. Reymond, *J. Am. Chem. Soc.* **2009**, 131, 8732–8733.

[2] T. Fink, J.-L. Reymond, *J. Chem. Inf. Model.* **2007**, 47, 342–353.

[3] L. Ruddigkeit, R. van Deursen, L. C. Blum, Jean-Louis Reymond, *J. Chem. Inf. Model.* **2012**, 52, 2864-2875

[4] J.-L. Reymond, L. C Blum, R. van Deursen, *Chimia* **2011**, 65, 863-867.