## SYNTHESIS OF VERSATILE BICYCLOPENTANE BUILDING BLOCKS FROM [1.1.1]PROPELLANE

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[1.1.1]Propellane (**1**) bridged a polycyclic molecule, with direct bond between the bridgehead atoms. This interesting molecule is easy to synthesize and has a practical relatively half-life in dilute solutions.[1]

In recent years, interest in synthesizing [1.1.1]bicyclopentane (**2**, BCP) containing molecules has grown exceedingly, because of the promising results in bioisosteric replacement of phenyl, alkynyl and 'butyl groups to BCP. <sup>[2]</sup> One main pathway of their synthesis is through propellane. <sup>[3]</sup> In contrast, there are no general, stable building blocks that can introduce BCP through C-C bond to molecules of biological importance. Therefore we planned to synthesize stable BCP reagents from [1.1.1]propellane, to make versatile building blocks. As opposed to recent literature example, with 4 step procedure, <sup>[4]</sup> we were able to produce the BCP aldehyde (**3**) in one step.

ArMgBr 
$$\longrightarrow$$
  $Et_2O / THF$   $Ar \longrightarrow MgBr$   $\longrightarrow$   $Ar \longrightarrow MgBr$ 

The aldehyde was indeed successfully proven as a stable and versatile building block, providing various BCP-containing molecules.

<sup>[1]</sup> Org. Synth. 1998, 75, 98.

<sup>[2]</sup> Angew. Chem., Int. Ed. 2017, 56, 12774-12777.

<sup>[3]</sup> J. Am. Chem. Soc. 2017, 139, 3209-3226. [4] Eur. J. Org. Chem. 2017, 6450-6456