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# Titanium-Catalyzed $[6\pi+2\pi]$ -Cycloaddition of Si-containing Alkynes to *bis*(1,3,5-Cycloheptatriene-7-yl)alkanes

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**Abstract:** The reaction between Si-containing alkynes and *bis*(1,3,5-cycloheptatriene-7-yl)alkanes in the presence of the two-component catalyst  $\text{Ti}(\text{acac})_2\text{Cl}_2\text{-Et}_2\text{AlCl}$ , led to the selective formation of mono- and bis-adducts - {9-[4-(2,4,6-cycloheptatrienyl)alkyl]-8-alkyl(phenyl)bicyclo[4.2.1]nona-2,4,7-triene-7-yl}(trimethyl)silanes and bis(7-trimethylsilyl-8-alkyl(phenyl)bicyclo[4.2.1]nona-2,4,7-triene-7-yl)alkanes in 78-86% yield. The structures of the obtained cycloadducts were confirmed by  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectroscopy.

**Keywords:** Homogeneous catalysis, *bis*(1,3,5-cycloheptatriene-7-yl)alkanes, titanium, cycloaddition, alkynes, bicyclo[4.2.1]nona-2,4,7-trienes.

Cycloaddition reactions are among the most versatile tools for the construction of various carbo- and heterocyclic systems, including carbocycles and complex polycyclic compounds with numerous chiral centers.<sup>1</sup> A special role in the synthesis of polycyclic hydrocarbons belongs to the reactions based on homo- and co-dimerization of cyclic polyenes (1,3,5-cycloheptatrienes, 1,3,5,7-cyclooctatetraenes, 1,3,5-cyclooctatrienes) catalyzed by transition metal compounds.<sup>2</sup> Notably, 1,3,5-cycloheptatriene and its derivatives are promising monomers for the synthesis of important bi-, tri-, and polycyclic compounds.<sup>3</sup>

Considerable contributions to the development of synthetic routes towards 1,3,5-cycloheptatriene-based cycloadducts were made by various research groups,

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