

New family of helicenes built from siloles

Oleg L. Tok*¹

¹ Institute of Inorganic Chemistry, Academy of Sciences of Czech Republic, 250 68 Řež, Czech Republic, E-Mail: tok@iic.cas.cz

In the course of our recent research we found that the treatment of vinyl(or allyl)alkynylsilanes with dialkylboranes leads to silacyclopentenes (or silacyclohexenes) with excellent yields (Fig.1 (A)).^[1] The reaction proceeds via 1,2-hydroboration of the terminal double bond with the following intramolecular 1,1-carboboration of alkynyl group. The introduction of one more alkynyl unit into the precursor yielded the selective formation of disilapentalenes (or disilaindenes) (Fig. 1 (B)).^[2] It was logical to assume that the further elongation of the precursor's chain by attaching more alkynylidenesilylene-units will result in the formation of fused oligosiloles where the number of the condensed heterocycles will be equal to the number of the alkynylidenesilylene units in a starting substrate. In order to prove this idea a series of oligo(alkynylidenesilylene) precursors have been synthesized and their reactivity towards diorganoboranes (e.g., 9-BBN) has been studied.

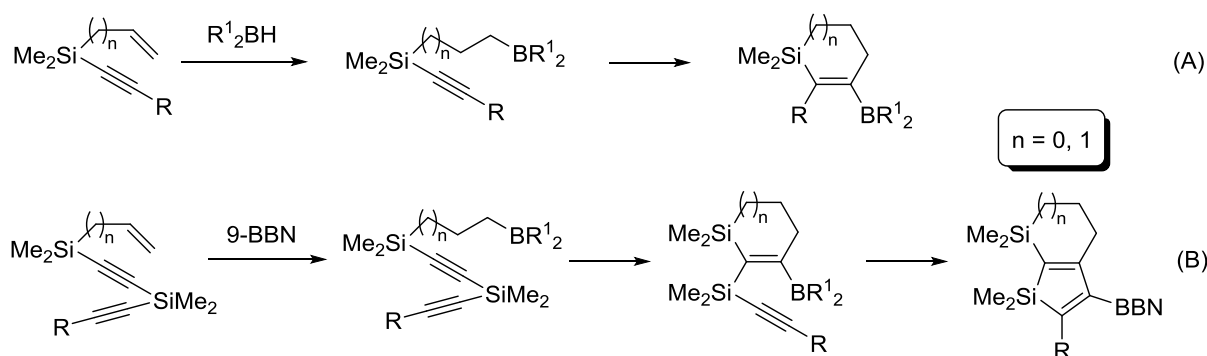


Figure 1. Synthesis of silacyclopentenes (silacyclohexenes) and disilapentalenes (disilaindenes) via combination of 1,2-hydro- and 1,1-carboboration reactions of vinyl(alkynyl)silanes.

The experimental details as well as structural and analytical aspects (XRD, UV-vis and NMR spectroscopy) will be presented.

[1] B. Wrackmeyer, O.L. Tok, R. Kempe, *Inorganica Chimica Acta* **2005**, 358(14), 4183-4190.

[2] B. Wrackmeyer, O.L. Tok, E.V. Klimkina, W. Milius, *European Journal of Inorganic Chemistry* **2010**, 15, 2276-2282.