Synthesis and Coordination Chemistry of *N,N′*-Diallyl-3,7-diazabicyclo[3.3.1]nonane

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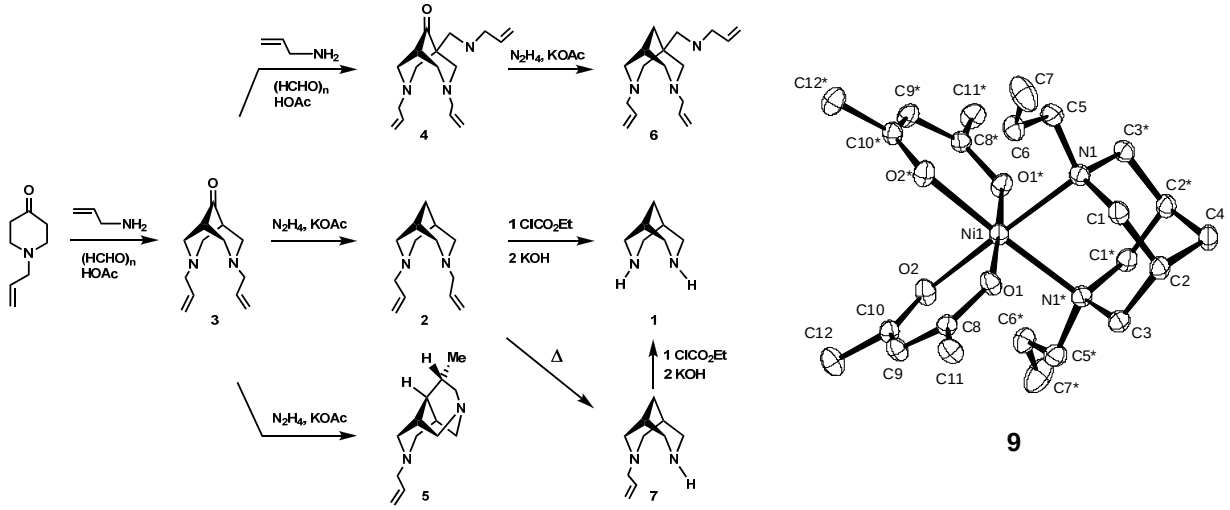
In 3,7-diazabicyclo[3.3.1]nonane (bispidine, **1**) and its derivatives the two nitrogen atoms are ideally positioned for coordination to transition metals. Previously, we have studied the coordination of *N,N′-dimethyl*-bispidine at nickel(0), giving rise to complexes such as $(C_7H_{12}N_2Me_2)Ni(C_2H_4)$ and $(C_7H_{12}N_2Me_2)Ni(C_2H_2)$.[1]
We have now investigated the synthesis and ligand properties of *N,N′-diallyl*-bispidine (**2**), with the intention to immobilize resulting complexes by means of the *N*-allyl functions.[2]
Revisiting the literature synthesis of **2**[3] we found that intermediately formed *N,N′*-diallyl-bispidinone (**3**) gives rise to several byproducts (**4**–**6**). Moreover, thermolysis of **2** affords **7**. Product **2** was successfully purified by column chromatography.



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Isolated complexes of **2** are $(C_7H_{12}N_2allyl_2)MgMe_2$ (**8**), $(C_7H_{12}N_2allyl_2)Ni(acac)_2$ (**9**, blue cubes), and $\{(C_7H_{12}N_2allyl_2)Cu(\mu\text{-}I)\}_2$ (**10**, colorless needles). So far, **9** has been immobilized on a polyester fiber and tested for its catalytic properties.[2b] The attempted $(C_7H_{12}N_2allyl_2)$-$PtCl_2$ (tackled by 1,5-hexadiene displacement in (1,5-hexadiene)$PtCl_2$ with **2**) loses HCl to stabilize into $\{C_7H_{12}N_2(allyl)(CH{=}CH{-}CH_2)\}PtCl$ (**11**), comprising a tridentate *N*-σ-allylic bispidine ligand.

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[1] Haack, K.-J.; Goddard, R.; Pörschke, K.-R. *J. Am. Chem. Soc.* **1997**, *119*, 7992.

[2] (a) Part of the research project IGF Nr. 15691*N*, administered by *DECHEMA* and *AiF*. Financial support from the Ministry of Science and Technology *(BMWi)* is gratefully acknowledged. (b) In cooperation with Opwis, K.; Mayer-Gall, T. at DTNW Krefeld.

[3] Miyahara, Y.; Goto K.; Inazu, T. *Synthesis* **2001**, 364.