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# Formation of Gallium-Nitrogen Rings and Cages by Inter- and Intramolecular Donor Acceptor Interactions

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*Keywords:* Donor-acceptor interactions; aluminum; gallium

We have recently started to systematically investigate main group model compounds with donor and acceptor centres in geminal position to one another.<sup>1</sup> The compounds characterised so far include E-O-N, E-N-N and E-C-N systems (E = Si, Ge, Sn), with the *E-O-N* and *E-N-N* moieties forming intramolecular E...N interactions.

Now we extended our interest to group 13 metals as acceptor atoms. We shall present our studies on compounds containing Ga-C-N units.

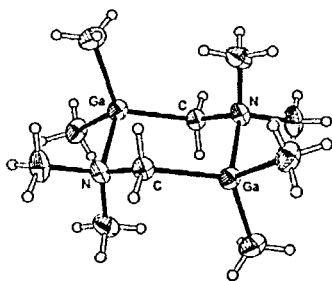
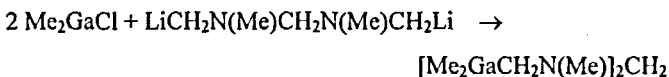
The six membered ring, (Me<sub>2</sub>GaCH<sub>2</sub>NMe<sub>2</sub>)<sub>2</sub>, was synthesised by the reaction of Me<sub>2</sub>GaCl with the  $\alpha$ -lithiated amine, LiCH<sub>2</sub>NMe<sub>2</sub>, generated via transmetallation of Bu<sub>3</sub>SnCH<sub>2</sub>NMe<sub>2</sub> with *n*-BuLi.<sup>2</sup>



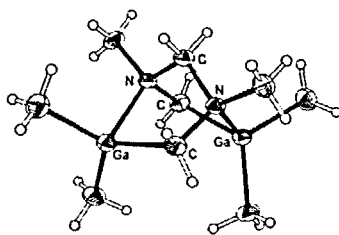
An analogous sulfur compound can be obtained by the following reaction and was also characterised by NMR and crystal structure determination.



The digalla-diaza-norbornane  $[\text{Me}_2\text{GaCH}_2\text{N}(\text{Me})]_2\text{CH}_2$  was obtained by the reaction of Karsch's dilithiated aminale<sup>3</sup> with two equivalents of  $\text{Me}_2\text{GaCl}$ .<sup>4</sup>



**Figure 1:** Crystal structure of  $(\text{Me}_2\text{GaCH}_2\text{NMe}_2)_2$



**Figure 2:** Crystal structure of  $[\text{Me}_2\text{GaCH}_2\text{N}(\text{Me})]_2\text{CH}_2$

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