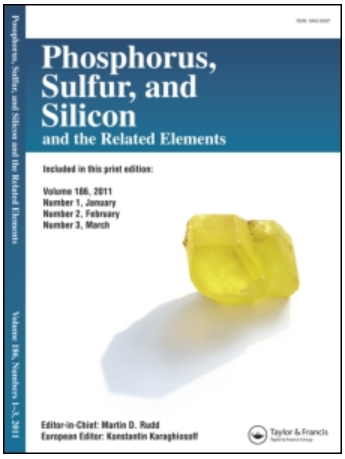


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**To cite this Article** Lustig, Christian and Mitzel, Norbert W.(2001) 'Formation of Gallium-Nitrogen Rings and Cages by Inter- and Intramolecular Donor Acceptor Interactions', Phosphorus, Sulfur, and Silicon and the Related Elements, 169: 1, 209 — 210
**To link to this Article: DOI:** 10.1080/10426500108546625
**URL:** http://dx.doi.org/10.1080/10426500108546625

# 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.[1] 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, $(Me_2GaCH_2NMe_2)_2$, was synthesised by the reaction of $Me_2GaCl$ with the α-lithiated amine, $LiCH_2NMe_2$, generated via transmetallation of $Bu_3SnCH_2NMe_2$ with *n*-BuLi.[2]

$$2\ Me_2GaCl + 2\ LiCH_2NMe_2 \rightarrow (Me_2GaCH_2NMe_2)_2$$

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

$$2\ Me_2GaCl + 2\ LiCH_2SMe \rightarrow (Me_2GaCH_2SMe)_2$$

The digalla-diaza-norbornane $[Me_2GaCH_2N(Me)]_2CH_2$ was obtained by the reaction of Karsch's dilithiated aminale[3] with two equivalents of $Me_2GaCl$.[4]

$$2\ Me_2GaCl + LiCH_2N(Me)CH_2N(Me)CH_2Li \rightarrow [Me_2GaCH_2N(Me)]_2CH_2$$



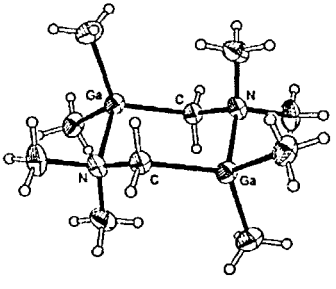


**Figure 1:** Crystal structure of $(Me_2GaCH_2NMe_2)_2$

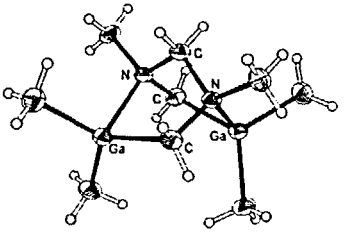


**Figure 2:** Crystal structure of $[Me_2GaCH_2N(Me)]_2CH_2$

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