

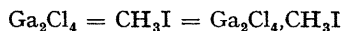
A Novel Method for the Synthesis of Gallium-Carbon Bonds

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Summary A methylgallium mixed halide is formed by reaction of "gallium dichloride" with methyl iodide.

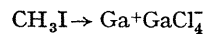
'GALLIUM DICHLORIDE' ($\text{Ga}^+\text{GaCl}_4^-$) is very soluble in methyl iodide. When the excess of solvent is removed from a solution at low temperature, a white solid is obtained and elemental analysis shows that one mole of iodide is absorbed per mole of halide, *i.e.*



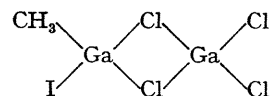
The resulting compound may be either the adduct (I) or a methylgallium mixed halide (II)

The compound shows no reducing properties which are characteristic of Ga^+ compounds. This suggests that adducts of type (I) are not formed; indeed such adducts

readily decompose at normal temperatures,¹ and the compound isolated is quite stable. The ^1H n.m.r. spectrum in benzene solution is a single peak at τ 9.70† (*cf.* τ 8.41 for CH_3I in benzene solution). This is in good agreement with values obtained for known methylgallium halides.²



(I)



(II)

We therefore suggest that (II) is the structure of the compound produced by the above reaction.

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† The signals were measured with benzene as the reference, and converted to the τ scale on the assumption that $\tau_{\text{benzene}} = 2.73$.

¹ H. C. Brown, L. P. Eddy, and R. Wong, *J. Amer. Chem. Soc.*, 1953, **75**, 6275.

² H. Schmidbauer and W. Findeiss, *Chem. Ber.*, 1966, **99**, 2187.