Indexing of these reflections gave space group P622 with a unit cell related to the Mn$_5$Si$_3$ cell by $c_2 = 3c$, $a = a-b$, $b = a+2b$. Intensities were collected on $\text{Cu}K\alpha$ single crystal. Fourier maps have shown disorder along the c-axis.

Using the fact that the $hk0$ data did not contain any superstructure reflexions, atoms should be split with different z values as it has been made for Eu$_2$Al$_4$ (Wang, Calvert, Gabe and Taylor, Acta Cryst. (1978) B34, 2281).

80.3-06 Ce$_6$Ga$_4$Ni$^\text{II}$ - A MEMBER OF R$_m$X$_{4n+2n}$X

SERIES OF NONHOMOGENEOUS LINEAR STRUCTURES.


The crystal structure study of Ce$_6$Ga$_4$Ni$^\text{II}$ compound is part of investigation of some crystallographic properties of nonhomogeneous linear structure series R$_m$X$_{4n+2n}$X. The structure is tetragonal ($P42mm$, $a = 4.262$, $c = 0.3539$). Atomic coordinates are as follows:

| x | 0.0 | 0.0 | 0.0 | 0.0 |
| y | 0.0 | 0.5 | 0.0 | 0.0 |
| z | 0.1665 | 0.1665 | 0.1665 | 0.1665 |

The coordination numbers of atoms are: Ce: 26, Ga: 9, Ni: 8. The structure is solved by means of crystallographic relationships with known structures and by direct methods (MULTAN - XTLMINO) and refined in anisotropic approximation to $R = 0.11$ for 408 reflections (SYNTEX P2$_1$, MoKα) using XTLMINO crystallographic program system (O.A. Usov et al, Abstracts of 6th Europ. Cryst. Meeting, Barcelona, 1980, p.150). The Ce$_6$Ga$_4$Ni$^\text{II}$ structure consists of layers of structure types R$_mX_{4n}$ (RX$_4$), Ce$_2$Ga$_{10}$Ni (XTLMlO) and Ce$_2$Ga$_{10}$Ni$_2$ (XTLMlO$^\text{III}$). The Ce$_2$Ga$_{10}$Ni$^\text{II}$ compound is a real member of the Ce$_6$Ga$_4$Ni$^\text{II}$ series with $m = 4$, $n = 2$.

80.3-07 Gd$_6$Ni$_2$S$_5$ - A NEW TERNARY SILICIDE WITH BRANCHED Ni-Si CHAINS.

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Ternary silicides of the rare earths with the late transition metals are attracting an increasing interest because of their peculiar structural features. In contrast to the great diversity of phases which is generally found in these ternary systems only a few compounds have so far been reported for the pseudobinary sections R$i$-Si, Gd$_6$Ni$_2$S$_5$, which is a part of a study of these sections is orthorhombic, Pnma with $a = 11.398$, $b = 4.155$, $c = 11.310$, $Z = 4$. The crystal structure is characterized by Ni and Si centered trigonal prisms. The arrangement of the Gd and Si atoms is related to that of Hf and P in the structure of Hf$_2$P$_2$. While the P-atoms are isolated in the latter structure, the occupation of a further trigonal prismatic site in Gd$_6$Ni$_2$S$_5$ gives rise to the formation of isotactic -Si-Ni(Si)- chains with an average Ni-Si distance of 2.45 Å. The relationship with Ce$_6$Ga$_4$Ni$^\text{II}$ and R$_6$Co$_6$Ga$_3$ will be discussed.