Study on the Ordered Phases with Long Period in the Gold-Zinc Alloy System : II. Structure Analysis of Au_3Zn[R_1], Au_3Zn[R_2] and Au_<3+>Zn

ABSTRACTS OF PAPERS
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Study on the Ordered Phases with Long Period in the Gold-Zinc Alloy System

II. Structure Analysis of $Au_3Zn[R_1]$, $Au_3Zn[R_2]$ and $Au_{3+}Zn$*

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Abstract

Crystal structures of the ordered phases, $Au_3Zn[R_1]$, $Au_3Zn[R_2]$ and $Au_{3+}Zn$ are investigated by X-ray diffraction using single crystals. The structure models proposed by Wilkens and Schubert for $Au_3Zn[R_2]$ and $Au_{3+}Zn$ are confirmed substantially, but partly corrected. The structure analysis of a new phase $Au_3Zn[R_1]$ is given, and the stacking faults present in this phase is investigated. It is suggested that the complicated atom shifts similar to those in $Au_3Zn[R_1]$ and $Au_3Zn[R_2]$ take place also in $Au_{3+}Zn$.

It is proposed that such complicated atom shifts seem to be a phenomenon not peculiar to the ordered phases in the Au-Zn alloy system but common to the ordered phases with long periods, such as Au_3Cd, Ag_3Mg, Cu_3Pd, CuAu II.

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