

<<贵金属合金相图及化合物结构参数>>

图书基本信息

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## 前言

The author's original intention for the compilation of the Chinese edition of the monograph Phase Diagrams of Precious Metal Alloys and Structure Parameters of Precious Metals Compounds was to provide for Chinese readers an overall, convenient and high speed searched, and reliable data including alloy phase diagrams and structure parameters of the eight elements of precious metals. This monograph has been published by Metallurgical Industry Press in January 2007. Its publication evoked strong repercussions in the worldwide scientific circles. Academician of Academy of Sciences of China, Professor Liang Jingkui of Physical Research Institute of Academy of Sciences of China, said in his letter to the authors, "this monograph gives an important help for the research workers engaging in the investigation on the phase diagrams and metallic materials". Academician of Academy of Engineering of China, Professor Dai Yongnian of Kunming University of Science and Technology also said in his letter to the authors, "the publication of this monograph has great significance for the readers both in China and abroad," and "this monograph involves detailed and complete data, the selection of which is conscientious, and it has full and reliable data." Professor Dai Yongnian said, this monograph could be used as an essential book in their desks of scholars in the scientific circle of phase diagram, conveniently use it and consult it. Dr. V. Vasekin, academician of the II A and the Chief Manager of FSUE NPK "Supermetal", Russia; wrote in his letter to the authors, "the book is just global and of huge interest for experts" and "your monograph is going to be a practical manual for experts of Supermetal, as well as for many other experts developing new alloys on the basis of precious metals."

## <<贵金属合金相图及化合物结构参数>>

### 内容概要

《贵金属合金相图及化合物结构参数（英文版）》是国内外发表的8种贵金属元素金（Au）、银（Ag）、铂（Pt）、钯（Pd）、铑（Rh）、铱（Ir）、锇（Os）和钌（Ru）合金相图及相关数据的荟萃，其中大部分内容是经过国际相图委员会组织专家评审的，因而具有较高的可靠性。

书中包括了8种贵金属元素的二元、三元、四元、五元及六元系合金相图及化合物的结构数据（包括相名称、化学式、晶体结构、结构符号、结构典型、皮尔逊符号及晶格参数等）的同时，提供了详细的参考文献。

书中共收入贵金属合金相图1080个体系，2126幅相图以及3283个贵金属金属间化合物。

全书共分5章：第1章是二元系合金相图；第2章是三元系合金相图；第3章是高元系合金相图；第4章是二元化合物的结构参数；第5章三元化合物的结构参数。

每章都有一个概述，它简要介绍了相关的根本概念、研究现状、发展趋势以及初步总结的经验规律。

《贵金属合金相图及化合物结构参数（英文版）》可供从事贵金属合金材料研究、开发、应用、设计的科技工作者及冶金工作者参考。

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## 章节摘录

插图：one is experimental determination and the other is calculation method according to certain physics models. However, up to now there is not a suitable program which could be universal and easily applied, whether it is the semi-empirical calculation based on the thermodynamic theory model, or the ab initio calculation. Therefore, the experimental determination of phase diagrams is still an important method in the field of construction of phase diagrams even though the theory calculation of phase diagrams is an important developing direction. Liang Jinkui (Liang, 1993) introduced in detail the normal methods for the construction of phase diagrams (including the preparation of sample, analysis of phase and thermal analysis). The experimental determination of phase diagrams consists of dynamic methods (i.e. thermal analysis) and static methods. The former is based on the determination of the relationship between the physical and chemical properties of a system matter with temperature according to a certain continuous variation program of temperature. The thermo-analysis is more suitable to determine the system with faster rate of phase transition. However, the latter is based on the constant-temperature treatment of samples with different compositions at different temperatures in proper order, then quenching to room temperature. This method is also called cool-quenching method. It is very important for the static methods to decide whether the equilibrium of the sample is reached at given temperature. The other factors to inference the measurement are the composition, temperature-gradient, and surface action as additional variables. Of course thermodynamic measurements (such as calorimetry and equilibrium method) also could be used to determine phase diagrams. However, in most cases these methods could not obtain phase diagram as other methods do. Because of it relates with thermodynamic calculation. It is an important tool for the determination of phase diagrams. In the normal methods for the determination of phase diagrams, the preparation of samples is a key problem. Robert D. Shull of the National Bureau of Standards, USA, discussed the phase diagram sample preparation in 1983 (Robert, 1983). He pointed out that three key elements require attention.

编辑推荐

《贵金属合金相图及化合物结构参数(英文版)》: Phase Diagram,s" q/Preciou,s" Metal Alloys and Structure Paradmeters of Pre cious Metal Compounds collected the alloy phase diagrams of the eight ele ments of precious metals ( platinum, palladium, rhodium, iridium, osmium, ruthenium, gold and silver ) , and the structure parameters of the precious metal compounds reported before 1996 and assessed or corrected before 2007 ( including 2007 ) , the achievements reported by researchers in China before2007 were also involved in it. 1109 systems, 1662 phase diagrams of preciousmetal alloys and 3722 precious metal compounds were included in the book.The book is intended for the researchers, engineers and designers on the precious metal alloy subject.He Chunxae is the winner of this Special Allowance by the State Council of P.R.China. He Chunxiao and Li Guanfang are professors of Kunming Institute of Precious Metals, China.

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