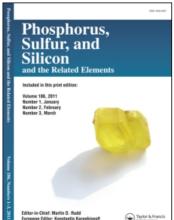
This article was downloaded by:

On: 29 January 2011

Access details: Access Details: Free Access

Publisher Taylor & Francis

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Phosphorus, Sulfur, and Silicon and the Related Elements

Publication details, including instructions for authors and subscription information: http://www.informaworld.com/smpp/title~content=t713618290

Regularities of Phosphides Formation on Phosphorus Interaction with Elements

S. V. Muchnik^a; V. B. Chernogorenko^a; K. A. Lynchak^a; Sh. B. Tasybaeva^a; Yu. F. Shkaravsky^a Institute for Materials Science Problems of the Ukrainian Academy of Sciences, Kiev, USSR

To cite this Article Muchnik, S. V., Chernogorenko, V. B., Lynchak, K. A., Tasybaeva, Sh. B. and Shkaravsky, Yu. F.(1990) 'Regularities of Phosphides Formation on Phosphorus Interaction with Elements', Phosphorus, Sulfur, and Silicon and the Related Elements, 51: 1, 466

To link to this Article: DOI: 10.1080/10426509008040990 URL: http://dx.doi.org/10.1080/10426509008040990

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: http://www.informaworld.com/terms-and-conditions-of-access.pdf

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

REGULARITIES OF PHOSPHIDES FORMATION ON PHOSPHORUS INTERACTION WITH ELEMENTS

S.V.MUCHNIK, V.B.CHERNOGORENKO, K.A.LYNCHAK, SH.B.TASYBAEVA, and YU.F.SHKARAVSKY Institute for Materials Science Problems of the Ukrainian Academy of Sciences, Krzyzanovskogo 3, Kiev 252680, USSR

During phosphide synthesis from elements in the evacuated tubes the reaction rate is controlled, as a rule, by the diffusion of element ions through solid phosphide layers. Such a synthesis takes a number of hours. During interaction under combustion regime (1) the reaction region spreads over the powder mixture of metal and phosphorus, the phosphorus evaporates and interacts with the heated metal. Then a liquid phase with composition close to the eutectic is formed, which dissolves metal particles and is simultaneously enriched with phosphorus with heat liberation. The liquid phase provides high reaction rates and the synthesis is finished after some seconds. During interaction in ternary systems, e.g. Ni-Fe, Cu, Mo, Ti, Cr, B-P, Fe-Mo-P, Cu-Zr-P, as a rule, solid solutions or mixtures of binary and ternary phosphides, seldom individual phosphides, are formed. A study of the interaction reactions under combustion regime between the red phosphorus and oxides of some metals (Cu, Fe, Co, Ni) resulting in phosphides and phosphates formation was carried out. In aqueous medium phosphorus interacts with Cu, Ag, Au ions, and those of platinoids. Interaction of copper sulphate with yellow phosphorus aqueous dispertion was studied in detail. As a result of (PO) phosphorus disproportioning copper phosphide Cu_2P (P^{3-}) and orto-phosphoric acid (P^{5+}) are formed.

(1) V.B.Chernogorenko, S.V.Muchnik, K.A.Lynchak et al., Materials Res. Bull., 16, 1 (1981).