

## CONTENTS

### Review

- Babanly M. B., Mashadiyeva L. F., Imamaliyeva S. Z.,  
Babanly D. M., Tagiyev D. B., Yusibov Yu. A.  
Complex copper-based chalcogenides:  
a review of phase equilibria and thermodynamic  
properties  
579
- Bekker T. B., Davydov A. V., Sagatov N. E.  
Functional borates and their high-pressure  
polymorphic modifications. Review  
620
- Vasilyeva I. G.  
Nonstoichiometry of refractory inorganic  
compounds with a volatile component  
determined by new methods of physicochemical  
analysis. Review  
633
- Zavrazhnov A. Yu., Brezhnev N. Yu., Nekrylov I. N.,  
Kosyakov A. V., Kostryukov V. F.  
Phases with layered (AB) and “defective” ( $A_2B_3$ )  
structures in  $A^{III}$ - $B^{VI}$  systems. Part 1. Structural  
uniqueness and properties of bulk samples  
and films. Review  
646
- Lutsyk V. I., Zelenaya A. E., Vorob'eva V. P.  
Phase transformations in systems formed  
by titanium, silicon, aluminum, and zirconium  
oxides: Phase diagrams prediction and modeling.  
Review  
666
- Fedorov P. P., Buchinskaya I. I.  
Sodium fluoride and rare earth trifluorides  
systems. Review  
687
- Original articles**
- Vasilyeva I. G., Sinyakova E. F., Gromilov S. A.  
Phase transformations of ternary copper iron  
sulfide  $Cu_{1.1}Fe_{1.9}S_{3.0}$  under temperature  
variations: thermodynamic and kinetic aspects  
706

Zelenina L. N., Rodionova T. V., Chusova T. P.,  
Sartakova A. V., Manakov A. Yu.

Physicochemical study of the processes  
of  $\beta$ -cyclodextrin hydrates dehydration  
716

Nabiiev E. R., Orujlu E. N., Aghazade A. I.,  
Hasanov A. A., Babanly M. B.

The solid-phase equilibria in the  $GeBi_2Te_4$ -  
 $SnBi_2Te_4$ - $Bi_2Te_3$  system at 300 K and the  
characterization of tetradymite-type layered  
solid solutions  
725

Omarov Sh. O., Pakhomov N. A.

The effect of the aging time of the  $ZrO_2 \cdot nH_2O$   
coagel: features of its phase formation  
and the evolution of its adsorption properties  
732

Semenova G. V., Sushkova T. P., Golentsova A. N.  
Phase subsolidus separation of the Ge-P-Sn  
ternary system  
745

Sinyakova E. F., Kokh K. A.

Behavior of major and minor elements during  
directional crystallization of Fe-Ni-Cu-S-(Rh,  
Ru, Ir, Pt, Pd, Ag, Au) melt  
755

Fedorov P. P.

Labile states are the basis of functional  
materials  
772

### Short communication

Gavrilchev K. S., Guskov V. N., Gagarin P. G.,  
Guskov A. V.  
Evaluation of the thermodynamic stability  
of  $REMgAl_{11}O_{19}$  ( $RE = La, Pr, Nd, Sm$ ) hexaaluminates  
with a magnetoplumbite structure  
in the high temperature region  
782