

CONTENTS

Problems of Planetology, Cosmochemistry and Meteoritica 5

Basilevsky A.T. ¹ and Yuan Li ² . Surface morphology of permanently shadowed floors of the south-polar lunar craters Haworth, Shoemaker and Faustini. <i>UDC 523.3</i>	5
Glazovskaya L.I. ¹ , Piryazev A.A. ^{2,3} , Shcherbakov V.D. ¹ Shock transformation of zircon in Logoisk (Belarus) impacties.....	7
Gorbachev P.N., Bezmen N.I. First results of experimental Modeling of the chondritic structure of meteorites. <i>UDC 550.4</i>	10
Guseva E.N. and Ivanov M.A. Spatial-genetic relationships corona-sources of volcanism and volcanoes of Venus. <i>UDC 523.42</i>	12
Malyshev D.G. ¹ , Ernst R.E. ² , Ivanov M.A. ¹ Geological history of Samodiva Mons on Venus	15
Maxe L.P. Shape and morphology of cosmic dust particles as manifestation of the adiabatic shift. <i>UDC 524.1-8</i>	17
Mukhamedzhanova A.E. Valley topography of northeastern Terra Cimmeria on Mars. <i>UDC 523.4</i>	21
Portnov A.M. Fracture-shock morphology of the Mars surface and interpretation of its magnetic and gravitational fields	24
Tsel'movich V.A. ¹ , Shelmin V.G. ² , Maxe L.P. ³ , Kurazhkovskii A.Yu. ¹ Microscopic traces of the Chulymskiy bolide (falling of 1984, point 1, Minaevka). <i>UDC 523.64</i>	27
Yakovlev O.I., Shornikov S.I. Evaporation features of the outer zones of Ca-Al-inclusions of chondrites	30

Mineral equilibria at high PT-parameters 33

Chevychelov* V.Y., Viryus A.A. Conditions for formation of carbonate-aluminosilicate melt at melting of carbonate-pelite rock at conditions of elevated CO ₂ partial pressure. <i>UDC 550.42</i>	33
Fedkin V.V. Chemical heterogeneity of garnet and diversity of its manifestations in eclogite-blueschist complexes.....	35
Fedkin V.V. ¹ , Shchipansky A.A. ² Coherent processes of formation and exhumation of the maksyutov eclogite-blueschist complex (Southern Ural).	39
Gorbachev N.S., Kostyuk A.V., Gorbachev P.N., Nekrasov A.N., Sultanov D.M. Experimental study of the influence of C-O-H-S fluid on phase relationships in basalt-(FeS+Fe) system: immiscibility of FeS+Fe-C melt, interphase distribution of siderophile elements. <i>UDC 123.456</i>	43
Kostyuk A.V. ¹ , Gorbachev N.S. ¹ , Nekrasov A.N. ¹ , Brovchenko V.D. ² , Novikov M.P. ¹ Interaction of basalt melt with S-containing oil- and gas-saturated rocks (based on experimental data). <i>UDC 123.456</i>	46
Kuzyura A.V. ¹ , Spivak A.V. ¹ , Zakharchenko E.S. ¹ , Kriulina G.Y. ² , Skryabina A.V. ² , Korepanov V.I. ³ Residual stress of trapped mineral inclusions in diamond from the Zapolyarnaya pipe by Raman spectroscopy data. <i>UDC 552.11</i>	49
Kuzyura A.V. ¹ , Kriulina G.Y. ² , Spivak A.V. ¹ , Zakharchenko E.S. ¹ , Skryabina A.V. ² , Golunova M.A. ¹ , Sharapova N.Y. ¹ Inclusions in diamonds of the Zapolyarnaya pipe (Yakutia) by Raman spectroscopy data. <i>UDC 567.6, 568.1, 551.79.52</i>	

Thermodynamic properties of minerals and fluids 56

Ivanov M.V. Thermodynamic model of fluid water-carbon dioxide for temperatures 50-350°C and pressures 0.2-3.5 kbar based on the Van Laar equation. <i>UDC 550.41+536.7</i>	56
Ivanov M.V. Thermodynamic models of ternary fluid systems H ₂ O-CO ₂ -NaCl and H ₂ O-CO ₂ -CaCl ₂ for temperatures 150-350°C and pressures 0.2-1.4 kbar. <i>UDC 550.41+536.7</i>	59
Korepanov Ya.I., Chareev D.A., Osadchii V.O., Osadchii E.G. Thermodynamic properties of AgPd ₃ Se determined by the solid-state EMF method in the temperature range 373 - 773 K. <i>UDC 550.4.02</i>	62
Misyura M.A., Bushmin S.A., Aleksandrovich O.V., Mamykina M.E., Savva E.V. Thermodynamic model of the H ₂ O-LiCl-NaCl system for fluid inclusions study: calculation using Pitzer's equations, comparison with experiments. <i>UDC 550.41</i>	64
Shornikov S.I. Thermodynamic properties of the Na ₂ O-P ₄ O ₁₀ melts	67
Shornikov S.I. Thermodynamic properties of the K ₂ O-P ₄ O ₁₀ melts	70
Shornikov S. I. Thermodynamic properties of the FeO-P ₄ O ₁₀ melts	73

Synthesis of minerals 77

Bublikova T.M., Setkova T.V., Balitsky V.S., Nekrasov A.N., Drozhzhina N.A. Synthesis of fine-crystalline malachite and its application to increase wear resistance of natural mineral samples. <i>UDC 553.897.431.2:549.07</i>	77
---	----

CONTENTS

Kotelnikov A.R. ¹ , Suk N.I. ¹ , Akhmedzhanova G.M. ¹ , Kotelnikova Z.A. ² , Drozhzhina N.A. ¹ Study of cation exchange equilibria of (K,Rb)-gallium feldspars. <i>UDC 550.89:549.07</i>	79
Kotelnikov A.R., Suk N.I., Akhmedzhanova G.M., Drozhzhina N.A. Synthesis of (Rb,Ba)-feldspar solid solutions. <i>UDC 550.89:549.07</i>	82
Kovalskaya T.N. ¹ , Ermolaeva V.N. ^{1,2} , Kovalskiy G.A. ¹ , Varlamov D.A. ^{1,3} , Chukanov N.V. ³ , Chaychuk K.D. ¹ Synthesis of zirconosilicates under high alkalinity conditions	83
Kovalskaya T.N. ¹ , Ermolaeva V.N. ^{1,2} , Kovalskiy G.A. ¹ , Varlamov D.A. ^{1,3} , Chukanov N.V. ³ , Chaychuk K.D. ¹ Synthesis of zircono- and titanosilicates under high alkalinity conditions.....	86
Redkin A.F. ¹ , Ionov A. M. ² , Nekrasov A.N. ¹ , Podobrazhnykh A.D. ³ , Mozchil R.N. ² Hydrothermal synthesis of platinum-antimony intermetallic compounds.....	88
Setkova T.V. ¹ , Vereshchagin O.S. ² , Spivak A.V. ¹ , Gorelova L.A. ² , Chistyakova D.A. ³ Growth of V-rich tourmaline on seed. <i>UDC: 549.612</i>	91

Hydrothermal equilibria and ore formation 94

Alekseyev V.A. ¹ , Belokhin V.S. ² , Mokhov A.V. ¹ , Gromyak I.N. ¹ Transfer and precipitation of silica during dissolution of basalt. <i>UDC 550.4.02</i>	94
Kotelnikov A.R. ¹ , Suk N.I. ¹ , Damdinov B.B. ² , Kotelnikova Z.A. ³ Damdinova L.B. ⁴ Fluids in the earth's crust and their role in the transport of matter (experimental study). <i>UDC 553.21/24: 550.89</i>	97
Kotelnikov A.R. ¹ , Suk N.I. ¹ , Damdinov B.B. ² , Damdinova L.B. ³ Experimental modeling of ore matter transport and formation of ore paragenesis. <i>UDC 553.062: 550.89</i>	99
Kotova N.P., Korzhinskaya V.S. Comparative analysis of data on pyrochlore and niobium oxide solubility in aqueous fluoride solutions.....	102
Kotova N.P. Experimental studies of solubility of Nb ₂ O ₅ in LiF solutions at 550°C and 50 to 500 MPa.....	105
Novikov M.P., Gorbachev P.N. The influence of P-T parameters on the stability of the rhabdophanit (rhabdophan). <i>UDC 550.4</i>	107
Tauson V.L., Lipko S.V., Babkin D.N., Smagunov N.V., Belozerova O.Yu. Origin of Au-Ag mineralization in sphalerite ores: Evidence from hydrothermal study of ZnS-Ag-Au and ZnS-Ag-Au-Sn systems. <i>UDC 550.89 + 550.42</i>	109

The formation and differentiation of magmas 112

Gnuchev Y.Y., Bychkov D.A., Koptev-Dvornikov E.V. A single plagioclase liquidus compositometer for water-containing and anhydrous systems. <i>UDC 552.111</i>	112
Kotelnikov A.R. ¹ , Ananiev V.V. ² , Suk N.I. ¹ , Krinochkina O.K. ³ , Krinochkin L.A. ⁴ Experimental and theoretical modeling of crystallization of gabbro-dolerite of Kosmosero (Zaonezhie, Karelia). <i>UDC 553.21+550.42: 550.89</i>	114

Physical chemical properties of geomaterials 118

Ionov A.M. ¹ , Barkalov O.I. ¹ , Shulyatev D.A. ² , Gavrilicheva K.A. ¹ and Shahlevich O.F. ¹ Charoite transformations under thermal treatment	118
Rodkin M.V. ¹ , Punanova S.A. ¹ , Martynova G.S. ² Trace element composition of natural objects. <i>UDC 550.4.41</i>	123
Rodkin M.V. ^{1,2} , Punanova S.A. ² , Rukavishnikova T.A. ¹ On the nature of the relationship of the trace elements composition of deep fluids with the chemical composition of the Upper, Middle and the Lower crust and biota. <i>UDC 550.8:622.276</i>	127

Experimental geoecology 130

Salavatova D.S., Bychkov D.A., Fiaizullina R.V. Adsorption properties of sand-gel material in relation to mercury (ii) ions in the presence of other metals. <i>UDC 550.4.02 550.41 550.42</i>	130
--	-----

Engineering of experiment 133

CONTENTS

Chevychelov* V.Y., Kotelnikov A.R. Methods of conducting experiments on the melting of carbonate-silicate rocks at elevated CO ₂ partial pressure. <i>UDC 550.42</i>	133
Zharikov A.V., Malkovsky V.I., Yudintsev S.V. A new method for studying the transport properties of rock samples - application for the assessment of radionuclides colloidal migration. <i>UDC 621.039.7</i>	136

Interaction in the systems of fluid–melt–crystal 140

Bukhtiyarov P.G. ¹ , Persikov E.S. ¹ , Aranovich L.Ya. ² , Nekrasov A.N. ¹ , Kosova S.A. ¹ Metal-silicate separation in basalt melts interacting with hydrogen under conditions bottom of the Earth's crust and upper mantle (experimental study). <i>UDC 552.13</i>	140
Khodorevskaia L.I., Kosova S.A., Spivak A.V., Safonov O.G., Zakharchenko E.S. Experimental study of partial melting garnet-two-mica schist with CO ₂ , CO ₂ -H ₂ O fluid at 500 MPa and 900°C. <i>UDC 552.13</i>	142
Korzhinskaya V.S., Kotelnikov A.R., Suk N.I., Van K.V. Experimental investigations of solubility of Zr _{0.5} Hf _{0.5} SiO ₄ solid solution in silicate melts (T = 800°, 1000°C, P – 400 MPa). <i>UDC 550.89</i>	145
Persikov E.S. ¹ , Bukhtiyarov P.G. ¹ , Aranovich L.Ya. ^{1,2} , Shaposhnikova O.Yu. ¹ , Nekrasov A.N. ¹ Features of crystallization of magnesian basalt melt during interaction with hydrogen at the boundary of the Earth's crust with the upper mantle (preliminary results).	148
Rusak A.A. ¹ , Shchekina T.I. ² , Zinovieva N.G. ² , Bychkov A.Y. ² Distribution of rare earth elements, scandium, yttrium and lithium between melt and aqueous fluid at 800°C, 1 and 2 kbar. <i>UDC 552.13</i>	151
Safonov O.G., Khodorevskaia L.I., Spivak A.V., Kosova S.A., Viryus A.A., Zakharchenko E.S. Possible sources of CO ₂ in high-temperature metamorphism. Experimental studies. <i>UDC 552.13</i>	155
Shchekina T.I. ¹ , Kotelnikov A.R. ² Alferyeva Ya.O. ¹ , Zinovieva N.G. ¹ Modeling of the interaction between granite melt and dolomite at 700°C, P _{H2O} = 1 kbar and 800°C, P _{H2O} = 4.5 kbar in the presence of fluorine. <i>UDC 552.113</i>	159
Suk N.I. ¹ , Damdinov B.B. ² , Kotelnikov A.R. ¹ , Damdinova L.B. ³ , Khurbanov V.B. ³ Solubility of phenakite in aluminosilicate melts. <i>UDC 550.89:549.08</i>	161
Suk N.I., Kotelnikov A.R. Experimental study of cassiterite solubility in alumina-silicate melts. <i>UDC 550.89:549.08</i>	163

AUTHORS INDEX 166