
TABLE OF CONTENTS

PREFACE	5
Sections 1. GEOTHERMAL RESOURCES, COMMON PROBLEMS	
1. Sugrobov V.M., Kononov V.I. and Postnikov A.I. Prognostic geothermal resources of Kamchatka and Kuril Islands modern volcanism areas: scientific and practical aspects	9
2. John W. Lund, R. Gordon Bloomquist, Tonya L. Boyd, Joel Renner The United States of America country update	25
3. Bogie I., Lawless J.V., Rychagov S. and Belousov V. Magmatic-related hydrothermal systems: classification of the types of geothermal systems and their ore mineralization	51
4. Karpov G.A. Bulk composition and conditions of mineral and ore formation in modern ore-forming volcanogenic gas – hydrothermal systems of Kamchatka	74
5. Rychagov S.N., Belousov V.I., Sugrobov V.M., Postnikov A.I. and Alekseev Yu.P. Prospects of geothermal energy use in the Kuril Islands	89
6. Chernev I.I. Mutnovsky geothermal deposit: results of the exploitation, monitoring of main parameters and estimate of influence of the reinjection on the winning boreholes	106
Section 2. STRUCTURE, THERMAL AND POWER SUPPLY OF HYDROTHERMAL-MAGMATIC SYSTEMS	
7. Rychagov S.N. Hydrothermal-magmatic systems of island arcs: the structure and stages development	117
8. Fedotov S.A., Delemen I.F., Utkin I.S., Utkina L.I. Dynamics of the development of flowing magmatic chambers on Mutnovsko-Gorelovsky group of volcanoes, their thermal fields and underground heat, saved by them	141
9. Belousov V.I. Rychagov S.N., Kuzmin Yu.D. and Belousova S.P. The formation hypothesis of crusts heat sources in hydrothermal-magmatic convective systems	153
10. Leonov V.L. Volcanic ridges: morphology, orientation and geothermal sense	171
11. Khubaeva O.R., Chulga O.V., Kotenko L.V., Kotenko T.A. Morphostructure and estimate of a heat efflux in northern part of Paramushir Island	181
Section 3. PETROLOGY, MINERALOGY AND GEOCHEMISTRY OF ROCKS	
12. Korobov A.D., Rikhter Ya. A. Hydrothermal lithogenesis in modern and ancient volcanism areas	195
13. Rychagov S.N., Korobov A.D., Glavatskikh S.F., Goncharenko O.P., Rikhter Ya. A. Evolution of metasomatic processes in the structure of island arc hydrothermal-magmatic systems	207
14. Richter J.A. The modern and ancient ore-forming hydrothermal magmatic systems: the zonality and the dynamics of evolution	217
15. Frolova J.V., Ladygin V.M., Rychagov S.N. Petrophysical properties of host rocks in geothermal fields	233
16. Dril S.I., Martynov Yu.A., Rychagov S.N., Kalacheva E.G., Sandimirova G.P., Koroleva G.P., Golubeva E.D. Origin of quaternary volcanism and geochemistry of hydrothermally altered rocks of the Vernadsky ridge, Paramushir Island	247
17. Gordienko I.V., Klimuk V.S., Filimonov A.V. Volcanism of the Uda-Vitim island-arc system (Transbaikalia)	257

18. <i>Tsarev D.I.</i> Version of formation acid magma in subvolcanic conditions	266
19. <i>Boikova I.A., Rychagov S.N., Sandimirova E.I. and Glavatskikh S.F.</i> Hydrothermally-metasomatic zonality and formation rocks conditions of Vernadskogo volcanic ridge (Island Paramushir)	275

Section 4. GEOCHEMISTRY AND DYNAMICS OF GASES AND NATURAL WATERS

20. <i>Rychagov S.N., Belousov V.I., Kuzmin Yu.D. and Belousova S.P.</i> Role of gases in creation of hydrothermal-magmatic systems and geothermal deposits	287
21. <i>Kalacheva E.G., Kotenko L.B., Kotenko T.A.</i> Hydrogeochemistry of the Northern part of the Paramushir Island (Kuril Islands)	303
22. <i>Kalacheva E.G., Rychagov S.N. and Belousov V.I.</i> Hydrogeology and Hydrodynamic of North-Paramushir Geothermal Area (Kuril Islands, Russia)	317
23. <i>Kuzmin Yu.D. and Raybinin G.V.</i> Monitoring of gas composition and hydrochemical parameters of hydrothermal-magmatic systems	328
24. <i>Potapov V.V., Smyvalov S.A., Bliznyukov M.A., Gorbach V.A.</i> Physical and chemical processes of formation, transfer and precipitation of colloidal silica in hydrothermal solution	343
25. <i>Zhatnuev N.S.</i> Transition of fluids by migration of closed cracks in plastic rocks	357

Section 5. ORE MINERALIZATION IN GEOTHERMAL SYSTEMS

26. <i>Rychagov S.N., Glavatskikh S.F., Sandimirova E.I. and Belousov V.I.</i> Ore minerals in the structure of hydrothermal-magmatic systems: contents, distribution, conditions of formation	363
27. <i>Zhatnuev N.S. and Rychagov S.N.</i> Evolution of hydrothermal systems containing vapourdominating zones in field of modern volcanism	380
28. <i>Koroleva G.P., Rychagov S.N., Sandimirova G.P., Stepanov I.I.</i> Geochemistry of gold and associated elements: problems of ore sources in volcanogenic mineral formation	392
29. <i>Sandimirova E.I.</i> Ore mineralization of North-Paramushir geothermal area volcanogenic rocks	408

Section 6. SEISMICITY OF GEOTHERMAL REGIONS AND GEOTECHNOLOGICAL ASPECTS

30. <i>Chebrov V.N and Kugaenko Yu.A.</i> Seismicity in Kamchatkan exploited hydrothermal fields	419
31. <i>Potapov V.V., Gorbach V.A., Smyvalov S.A., Bliznyukov M.A.</i> Extraction of chemical compounds and the problem of multipurpose using of hydrothermal heat carrier	428
32. <i>Potapov V.V., Gorbach V.A., Smyvalov S.A., Bliznyukov M.A.</i> Methods of silica extraction from hydrothermal solution and utilization of amorphous silica material	442
33. <i>T.A. Kotenko and L.V. Kotenko</i> The activity of volcano Ebeko in 2005 (Paramushir Island, North Kuril Islands)	