Geochemical types of intrusion-related gold deposits in the south-eastern part of East Sayan (Russia)

B. B. DAMDINOV

Geological Institute SB RAS, Ulan-Ude, Russia, damdinov@mail.ru

There are many gold deposits in the south-eastern part of East Sayan which earlier were classified as gold-quartz, gold-sulphide and gold-quartz-sulphide ore formations. In this region orogenic gold deposit are most wide-spread but some deposits attributed to intrusion-related gold deposits are known. They classified as gold-telluric, gold-bismuth-telluric, gold-bismuth and gold-antimony geochemical types based on mineral and chemical compositions of most efficient ore paragenesises.

Gold-telluric type deposits are related to island-arc granites which have two different stages of formation – 850 Ma and 500 Ma. These deposits characterized by prevalence of pyrite, native gold and gold, silver, lead, bismuth and nickel tellurides in the ores. *Gold-bismuth-telluric* deposits are associated with active continental margin granites. Formation of this geochemical ore specialization is related with two stages of ore-forming process. At first stage Au-Cu-Mo-(Bi)-porphyry system are formed (about 500 Ma) and later (about 325 Ma) intrusion of volcanic-plutonic association dykes and low-temperature Au-Hg-Te mineralization formation are occurred. With the same active continental margin granites *gold-antimony* type deposits are related. These deposits have such widespread minerals as stibnite in association with native gold and Sb-sulphosalts – andorite, zinkenite, chalcostibite. *Gold-bismuth* mineralization is associated with collision-type leucogranites with age about 500 Ma. This type deposits are characterized by association of native gold with arsenopyrite and Bi-minerals – bismuthinite, galenobismutite lillianite.

Common characteristic features of the south-eastern part of East Sayan intrusion-related gold deposits are spatial and genetic relationships with island-arc, active continental margin and collision-type granitoids, the primary role of Te, Bi, Sb in ore compositions, the wide range of temperature conditions of ore formation.