of Geochemistry and Analytical Chemistry, USSR Academy of Sciences, Moscow, USSR

Introduction. The pristine lunar nonmare rocks were considered as products of lunar early magmatic activity [6,9,13]. The strong siderophile depletion in the rocks as well as in lunar basalts relatively to terrestrial basalts can reflect compositional differences between the Moon and the Earth [2,2,3]. However, from contrary point of view [4] the pristine rocks could be formed in large impact melt pools with removal of siderophiles by carrier of metal, and, therefore, siderophile contents in the rocks may not represent lunar indigenous abundances of the elements. According to [4] siderophile contents in lunar primitive rocks and oceanic tholeiites are the same that suggests the compositional similarity of lunar primary matter and the Earth mantle, and, hence, the Moon derivation from the Earth mantle[5]. In this work to examine the problem the interelement correlations in the pristine rocks were studied using data[6]. The computations in logarithmic scale were made separately for ferroan anorthosites (PAN) and Mg-rich rocks[6].

Results. For PAN suite the significant interelement correlations (at 95% confidence level) were found mostly within the next element groups: (1) mafic - Mg, Fe, Mn, Cr, Ti, Co and Sc; (2) incompatible - Ba and REE (except Eu); (3) siderophile - Ni, Ir, Ge, Au and Re; (4) feldspatic - Cs, Al, Na, K, Eu and Ga. Moreover in some cases the elements of groups 1, 2 and 3 mutually correlate and anti-correlate with the elements of group 4 at the same confidence level. The volatiles S and Zn are good correlated with K only. In Mg-rich suite there are no good interelement correlation, except the elements within the groups 1 and 2. On the base of the good PAN correlation pattern the composition of PAN parent liquid (PANPL) was estimated with provided that Al2O3 content in the melt was 10.4 wt.% as adopted by[5]. Because there is no element correlated significantly with the all other elements, the composition of the PANPL was made taking into account the best correlation (at 95% confidence level). Ce and Pb contents were estimated from Al content; mafic elements (except Ti), Yb and Re, from Mg; REE (except Eu), Ba, Ti and Ir, from Pb siderophiles, from Ir and K, from Na; Na, Ca, Co, and Zn, from K. In the all element pairs the least squares fit logarithmic regression lines (except Pb, Fe-Si, Al, which is linear) were used approximating the element contents in the PANPL composition for correlation, and vice versa for anti-correlation. The balance was SiO2 content. The estimated composition of average rocks and ±1σ interval are shown in Table. The interval characterizes only error relatively to the element chosen as argument. The accuracy of our estimation of the PANPL composition is rather poor, and indicates large uncertainty in the following geochemical conclusions.

Discussion. The interelement relationships in PAN and Mg-rich rocks are drastically different that strongly supports Mg-rich/PAN diachotomy among pristine nonmare rocks[3,6,7]. The Mg-rich rocks are similar to lunar mare basalts in the element distributions (Fig.1-3). It suggests that element contents in the Mg-rich series are controlled mostly by fractionation of mafic silicates. However the absence of good interelement correlation in the suite confirms the view [6,8] that the Mg-rich rocks could not be formed by only one process of magmatic activity. In PAN suite there are very unusual positive correlations among mafic, siderophile and incompatible elements (e.g. Fig.1-3). However in the PAN case all these elements are to be incompatible as untrapped by plagioclase lattice. It means that the PAN element distribution is controlled by feldspar fractionation only. On the other hand, the PAN correlation pattern excludes segregation of metal during crystalisation of the rocks, because the process would have destroyed the observed La-siderophile correlations (Fig.1-3), but this pattern does not exclude preceding to crystallisation removal of metal, i.e. from PAN parent melt. According to La-siderophile pattern, estimated PANPL composition resides in area of intersection of trends of feldspar and mafic silicates fractionations. In contrast to [5,9] it means that siderophile contents in the PANPL were resulted from silicate-liquid fractionation, but not by settling of metal. Nevertheless, in support to [9,5] PANPL is similar to PG magmas in siderophile contents, except Ni, and differs strongly from indigenous siderophile abundances reported by [3,10]. Moreover the siderophile contents in PANPL coincide in general with one in oceanic tholeiites and reside near to trend of terrestrial La-siderophile fractionation expressed for example by KA-50 mantle sample[11] - BCR Canadian shield 12 lines (Fig.1-9). Thus, in contrast to [5,9] siderophile similarity between the lunar primary matter and the Earth mantle can be supported from pristine rock chemistry. However the similarity cannot be argued surely because of poor accuracy of estimation of PANPL composition, and some compositional differences between the material can be assumed too. In terms of contents of other elements, the PANPL composition differs in general from terrestrial and lunar basalts. When compared to basalt rocks, it is mostly near to Luna 24 forrobasalts in low REE, Ti and alkaline element contents, but it has significantly lower Fe/Mg ratio and its average bulk composition plots on SiO2-01-An diagram near spinel peridotite pehl. The PANPL can be comparable in chemistry with PIG magmas [6,5], although it seems to be somewhat enriched in Fe and depleted in Ti. In support of estimates [7,13,14], our PANPL has also positive Eu anomaly and depleted in Sr/Sm and Ti/Sm ratios (Fig.4). From the Sr/Sm and Ti/Sm depletions, it has been assumed [7] that the PAN parent melt was undergone by pyroxene fractionation.
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In the case of our PAW bulk composition, it suggests that this liquid could be generated at high pressure to be evolved along pyroxene-olivine cotectic line shifting to area of enriched in olivine compositions [e.g. 15]. Probably the model can explain also positive Eu anomaly in PAW as a result of the pyroxene fractionation. In fact, pyroxene can be slightly depleted in Eu [e.g. 10]. If the effect increases with increasing of pressure, then the Eu positive anomaly could be produced by the pyroxene fractionation.