
In this work the isotopic composition of Xe in 11 L3-L6 ordinary chondrites has been studied. It should be emphasized that earlier this mass spectrometer has not been used for the analyses of samples irradiated by reactor neutrons, so contamination by technological Xe is excluded. The method for Xe analyses is described in another work.

Large excess of $^{128}\text{Xe}$ (from 190 to 1100%) has been found at the total melting of the L6 ordinary chondrites. However, the excess $^{128}\text{Xe}$ is accompanied by large excess of the other spallogenic isotopes. At stepwise heating experiment the enrichment in $^{128}\text{Xe}$ in the Kuleshovka (L6), Stavropol (L6) and Bakhardok (L6) chondrites appeared to be very large. In some temperature fractions the $^{128}\text{Xe}/^{130}\text{Xe}$ ratio is 3.79 (for the Bakhardok chondrite) and even 8.67 (for the Stavropol chondrite) while the normal $^{128}\text{Xe}/^{130}\text{Xe}$ ratio is about 0.5.

The release curves of the typical cosmogenic isotopes $^{124}\text{Xe}$, $^{126}\text{Xe}$, $^{131}\text{Xe}$ and $^{128}\text{Xe}$ is obtained for the Stavropol meteorite (Fig. 2). Two major release peaks are observed in all curves at 1400°C and 800°C. These peaks are due to release of cosmogenic Xe. However, beside two major peaks one can see large peaks over the temperature interval 900-1300°C on the $^{128}\text{Xe}$ and $^{131}\text{Xe}$ release curves, which has not been observed on the release curves of the typical cosmogenic isotopes $^{126}\text{Xe}$, $^{124}\text{Xe}$, $^{130}\text{Xe}$.

Large excess of $^{128}\text{Xe}$ and $^{131}\text{Xe}$ in the Stavropol chondrite are attributed to the neutron capture reaction $^{127}\text{I}(n,\gamma)$. The $^{128}\text{Xe}$ reaction is responsible for the excess $^{128}\text{Xe}$. The excess $^{131}\text{Xe}$ may be generated by the $^{130}\text{Ba}(n,\gamma)$, $^{131}\text{Xe}$ and $^{130}\text{Te}(n,\gamma)$, $^{131}\text{Xe}$ reactions. But the last is more probable because of the similarity between release pattern of the excess $^{128}\text{Xe}$ and $^{131}\text{Xe}$: having similar geochemical properties, I and Te must reside in the same mineral phase.

The Bakhardok chondrite displays less excess of $^{128}\text{Xe}$. It may be due to the fact that the excess $^{128}\text{Xe}$ is released at the same temperature interval as the spallogenic Xe. However, the excess $^{128}\text{Xe}$ in the Bakhardok chondrite is not accompanied by the excess $^{131}\text{Xe}$. Thus the Bakhardok chondrite has a lower tellurium content or has been exposed to neutrons having the other energy spectrum.
A SEARCH FOR XE ISOTOPE ANOMALIES

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In the Zigailovka, Saratov, Nikolskoe, Elenovka, Tzarev, Krasny Ugol and Kuleshovka L3-6 chondrites the excess $^{128}$Xe and $^{131}$Xe has not been found even at stepwise heating experiment.

The isotopic composition of Kr in the Stavropol and Bakhardok chondrites has been also studied in order to find the excess $^{80}$Kr and $^{82}$Kr generated at neutron capture reactions $^{79}$Br(n, $\gamma$) $^{80}$Kr and $^{81}$Br(n, $\gamma$) $^{82}$Kr. However, large excess $^{80}$Kr and $^{82}$Kr has not been found and the excess $^{80}$Kr and $^{128}$Xe are not correlated well. Probably major part of the neutron-induced $^{80}$Kr and $^{82}$Kr had migrated from crystall structure during the history of the meteorites.


Fig. 1 Variation of isotopic ratio at stepwise heating experiment

Fig. 2. Release pattern of cosmogenic Xe at stepwise heating experiment on the Stavropol chondrite.