

Study of isotopic and elemental compositions of gases from Pesyanoe by stepwise crushing

A. I. Buikin¹, A. B. Verchovsky², K. A. Lorentz¹, A. Ya. Skripnik¹

¹V. I. Vernadsky Institute of Geochemistry and Analytical Chemistry, RAS, Moscow

²The Open University, UK

Bouikine@mail.ru

At the first time for meteorites we performed investigation of Ar, N₂, Ne isotope composition and He, Ar, Ne and N₂ elemental ratios in fluid inclusions in pyroxenes of different generations (dark Px-G, containing high amount of fluid inclusions, and light non-transparent Px-B with lower amount of fluid inclusions) from aubrite Pesyanoe. Both samples contain nitrogen in fluid inclusions with similar isotope composition (-12 to -30 ‰ Atm), but differ in Ar isotope composition: Px-B is characterized by more radiogenic argon (⁴⁰Ar/³⁶Ar = 110–170), while Px-G contains argon with higher proportion of solar argon and smaller variations in ⁴⁰Ar/³⁶Ar ratios (35–42). The samples as well differ in neon isotope composition – in Px-B it is considerably more cosmogenic. We also have shown that light nitrogen is situated mostly in fluid inclusions, and made an assumption that heavy nitrogen component (with positive δ¹⁵N values) can be primary magmatic in origin.

Key words: Pesyanoe, He, Ne, Ar, N₂, CO₂, fluid inclusions, stepwise crushing

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