

WANG Jian, NIE Jiangtao, 2014. Rare Earth Element Characteristics of Zoujiashan Deposit in Xiangshan Uranium Orefield. *Acta Geologica Sinica* (English Edition), 88(supp. 2): 470-471.

Rare Earth Element Characteristics of Zoujiashan Deposit in Xiangshan Uranium Orefield

WANG Jian, NIE Jiangtao

Beijing Research Institute of Uranium Geology, Beijing 100029, China

1 Brief Introduction of Study Deposit

Xiangshan volcanic basin is the most important base of uranium resource in China (Fig. 1), it's in the southwest of Ganhang tectonic-volcanic rock belt, Zoujiashan is one of the important uranium deposit in Xiangshan uranium orefield (Fig. 1 & Fig. 2), it's in the west of Xiangshan volcanic basin. This paper by classified collected near-ore wall rock, alteration rock, lean ore, rich ore from Zoujiashan uranium deposit, to contrast research rare earth element characteristics of Zoujiashan deposit.

Divided sample which pick up from Zoujiashan uranium deposit downhole into lean ore and rich ore two categories, study the rare earth element distribution curve characteristics of their own, to grasp the difference between rich ore and lean ore.

2 REE Characteristics of Lean Ore and Rich ore

The amount of rich ore rare earth elements are 257.14×10^{-6} , correspondent the amount of lean ore rare earth elements are 300.38×10^{-6} , there are not much difference on total amount (Table.1), but divide REE into light rare earth and heavy rare earth to separate study, we can discover lean ore priority enrichment light rare earth, rich ore priority enrichment heavy rare earth, lean ore ΣLREE are 257.2×10^{-6} , ΣHREE are 43.18×10^{-6} , rich ore ΣLREE are 187.43×10^{-6} , ΣHREE are 69.71×10^{-6} , These difference enrichment between LREE and HREE can demonstrate the transfer mode of uranium and rare earths in the ore-forming hydrothermal, when hydrothermal transfer rare earths in OH^- , F^- , CO_3^{2-} , HCO_3^- way, the stability of light rare earth will be far less than the heavy rare earth, so result heavy rare earth concentration. From the fractionation degree of rare earth elements, lean ore LREE/HREE between 3.21 to 12.07,

the average is 6.26, the average of La/Yb is 7.83, corresponding to the rich ore the two average are 2.71 and 1.91. With the increase of the uranium content, the style of rare earth element distribution curve from right bank to level and left bank, the lean ore have a similar style distribution curve with the periphery rock and beneath the periphery rock curve (Fig. 3 & Fig. 4). The average of rich ore δEu and Eu/Sm are respectively 0.33 and 0.11, corresponding to the lean ore the two average are



Fig.1 Schematic map of the Xiangshan uranium orefield

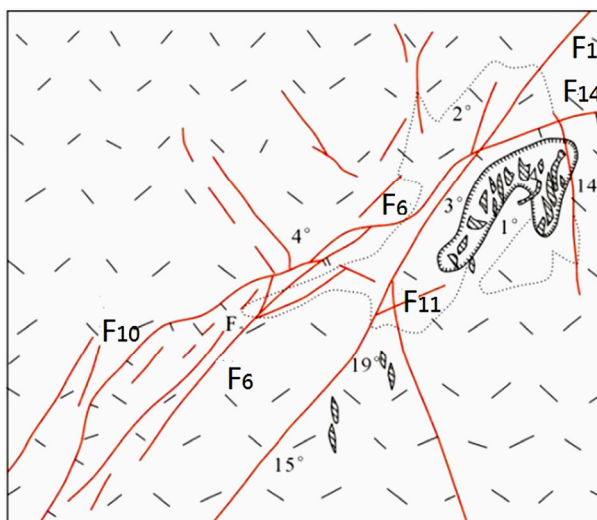


Fig.2 Schematic map of the Zoujiashan uranium deposit

* Corresponding author. E-mail: wjcnn@126.com

Table.1 Content of rare earth elements ($\omega_B \times 10^{-6}$)

	样号	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Y
Rich ore	Fk-1	52.5	87	10.1	39.5	9.44	1.32	8.84	1.79	11.5	3.08	13.4	3.27	29.5	6.48	719
	Fk-2	27.2	77.7	10.9	45.7	12.6	0.901	12.2	2.68	15.1	3.52	10.7	1.87	13.4	2.09	80.8
Lean ore	Pk-1	66.7	106	12	47.5	10.1	1.42	10.3	2.14	13.4	3.2	10.7	2.02	14.7	2.54	58.7
	Pk-2	59	112	13.8	55.1	11.2	1.51	10.3	2	11.2	2.29	7.46	1.24	8.74	1.44	50.3
Periphery rock	Pk-3	65.6	121	13.4	53	10	1.23	9.17	1.81	10.7	2.66	8.83	1.58	11.3	1.92	2333
	Pk-4	25.9	57	7.69	30.8	8.62	1.51	8.03	1.97	12	2.47	7.2	1.18	6.94	1.15	67.6
	Wk-1	77.6	202	28.7	138	41	6.2	45.7	10.9	83.5	27.6	132	30.2	242	42.4	58.5
	Wky-2	63.4	118	14.2	54.8	10.6	1.47	9.05	1.71	9.86	2.09	6.02	0.937	6.19	0.892	19.3
	Wk-3	60.3	148	23.2	128	70.4	7.88	117	39.4	334	94.5	350	69.2	433	67	92.2
	Wk-4	18	37.1	4.83	18.4	4.67	0.206	3.84	0.72	4.17	0.806	2.44	0.451	2.82	0.494	37.8

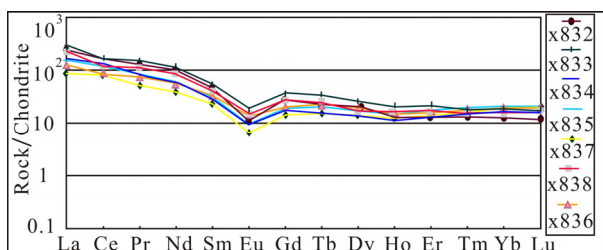


Fig.3 REE distribution curves of periphery rock

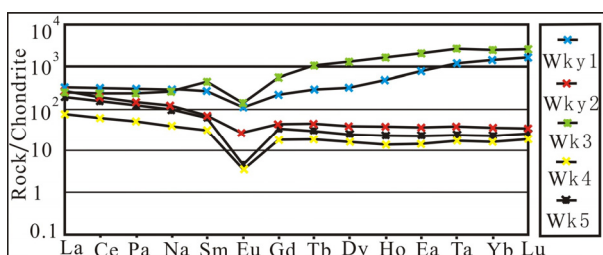


Fig.4 REE distribution curves of rich and lean ore

respectively 0.31 and 0.10.

3 Conclusion

Two groups of approximate values demonstrate the lava formation rich ore and lean ore have proximate fractional crystallization level and agmatic evolution level, indicates the reason for the difference grade of rich ore and lean ore ought to late hydrothermal activity and overlapping mineralization reformation.

References

- Guo Shuo, Zhao Yuanyi, Qu Huanchun, et al., 2012. Geological Characteristics and Ore -forming Time of the Dexing Porphyry Copper Ore Mine in Jiangxi Province . Acta Geologica Sinica, 86(3): 691-699.
- London D., 1986. Magmatic-hydrothermal transition in the Tanco rare-element pegmatite: Evidence from fluid inclusions and phase-equilibrium experiments. Am.Miner. , 71: :376-395.
- Martin H, Bonin B, Capdevila R et al., 1994. The Kuiqi peralkaline granitic complex (SE China): Petrology and geochemistry. J. Petrol., 35: 983-1015.
- Mcculloch M T, Gamble T A. 1991. Geochemical and geodynamical constraints on subduction zone magmatism. Earth Planet. Sci. Lett. , 102: 358-374.