# Microinclusions of phosphates in the oolitic iron ores from the Bakchar deposit (Western Siberia)

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The microlocal inclusion in the oolitic aggregates were studied by SEM (Tescan VEGA II LMU) combined with energy dispersive spectrometer INCA Energy. Mineral separations were discovered in the oolitic ores, it consists the sulfides (framboidal and euhedral pyrite, sphalerite, covellite and stibnite), native silver and REE phosphates.

The phosphatic association are represented by the compounds of calcium and REE. The phosphate minerals of the iron and the calcium from the oolitic iron ores of Western Siberia describes in the literature, but information about REE minerals not found. Dimensions phosphate precipitates in the oolite are very small, as reflected in the results analysis of X-ray microanalysis, which actually reflect the chemical composition of polymineralic compound. The distribution pattern of LREE often represented as Ce> La> Nd, and less Ce> Nd> La. Statistical processing of these data revealed the positive correlation of REE, calcium and phosphorus. The remaining elements ($Fe_{tot}$, Si, Al, K, S) are impurities and have a negative correlation with phosphorus. This suggests the presence of as calcium phosphates and phosphates of REE. Recalculation of chemical analyzes showed that the ratio of the amount of REE with phosphorus is 1:1. This ratio is typical for monazite. When converted chemical analyzes to formula of monazite observed some excess phosphorus. The correlation matrix shows that phosphorus tends to be more REE (significant correlation 1.00). Correlation same ratio of phosphorus to calcium is 0.95. Possibly, the excess phosphorus linked to the presence in the composition of apatite polymineralic unit. The microinclusions of phosphates are ultrafine mineral mixture of monazite and apatite.

The presence of sulfides, REE phosphates and native silver indicate unstable physical and chemical conditions of formation of the oolitic iron ore.

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