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## Is extraction of Fe from iron based minerals an appropriate method for determining trace elements?

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Various trace elements in different types of iron based geological reference materials [JSS 804-1 (hematite), JSS 820-2 (limonite), SU-1 and SU-1a (iron-nickel-copper-cobalt ores)] were investigated using k<sub>0</sub>-NAA in both forms: instrumental (k<sub>0</sub>-INAA) and radioanalytical (k<sub>0</sub>-RNAA).

To avoid the interference of iron as a matrix element, firstly mineral was dissolved in aqua regia then liquid-liquid extraction procedure by diisopropyl ether (DIPE) in hydrochloric acid media was applied. Trace elements were determined using k<sub>0</sub>-INAA after irradiation of water phase. Secondly, the mineral was irradiated and than radiochemical extraction of Fe were done using DIPE and trace elements were determined by k<sub>0</sub>-RNAA in water phase.

The k<sub>0</sub>-NAA method, applied to determine the content of the investigated elements, after removal of Fe enabled to follow the distribution of 39 elements through their corresponding intermediate/medium and long half-lived radionuclides. The elimination of the matrix element lowered the detection limit for some trace elements compared to their corresponding values determined by k<sub>0</sub>-INAA in powder form and with certified values for some elements. However, the results for some elements (e.g. As, Ba, Ca, Cs, Hf, K, Na, Zn and Zr) are higher comparing to k<sub>0</sub>-INAA in powder due to the adsorption/desorption on glassware. The k<sub>0</sub>-RNAA procedure shows better agreement than k<sub>0</sub>-INAA with data obtained by k<sub>0</sub>-INAA in powder mostly due to negligible blank contribution. The results of this work will be presented and discussed.

**Primary author:** Dr JACIMOVIC, Radojko (Jozef Stefan Institute, Ljubljana, Slovenia)

**Co-authors:** Ms TASESKA, Milena (Institute of Chemistry, SS. Cyril and Methodius University, P.O.Box 162, Skopje Macedonia); Dr MAKRESKI, Petre (Institute of Chemistry, SS. Cyril and Methodius University, P.O.Box 162, Skopje Macedonia); Prof. STAFILOV, Trajce (Institute of Chemistry, SS. Cyril and Methodius University, P.O.Box 162, Skopje Macedonia); Prof. STIBILJ, Vekoslava (Jozef Stefan Institute, Ljubljana, Slovenia)

**Presenter:** Dr JACIMOVIC, Radojko (Jozef Stefan Institute, Ljubljana, Slovenia)

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