Geochemical zoning of the Ab-Bagh sub-seafloor replacement SEDEX-type Zn-Pb deposit, Sanandaj-Sirjan zone of Iran

MEHDI MOVAHEDNIA[1], EBRAHIM RASTAD[2], ABDORAHMAN RAJABI[3], FRANCISCO JAVIER GONZÁLEZ[4]

[1] Department of Geology, Faculty of Basic Sciences, Tarbiat Modares University, Tehran, Iran, Movahhednia68@yahoo.com

[2] Department of Geology, Faculty of Basic Sciences, Tarbiat Modares University, Tehran, Iran, Rastad@modares.ac.ir

[3] School of Geology, College of Science, University of Tehran, Tehran, Iran, A.Rajabi@ut.ac.ir

[4] Marine Geology Mapping, Geological Survey of Spain, 28003 Madrid, Spain, fj.gonzalez@igme.es

The Ab-Bagh Zn-Pb deposit is located in the central part of the Sanandaj-Sirjan zone (SSZ) and southeastern corner of the Malayer-Esfahan metallogenic. Based on stratigraphic position, two ore horizons can be distinguished which are hosted in the Upper Jurassic-lower Cretaceous sedimentary sequence. Due to alternating pulses of hydrothermal fluid (Zone refining process), temperature changes and redox condiions, SEDEX deposits are chemically zoned. Vertically and horizontally chemical zonation well developed in ore horizon 1 of Ab-Bagh deposit, in a way that Pb/Ag increase from base to top and Cu/(Zn+Pb) and Pb/(Zn+Pb) increase from top to base in massive ore facies. Also, horizontally, Zn/Al_2O_3, S/Al_2O_3 and Cu are decrease and Ba is increase from massive to bedded ore facies. There is a significant positive correlation between Cd/Zn, Co/Zn and Ag/Pb in sulphide ores from ore horizon 1. REE content of sulphide ore is very low, however, REE content of bedded ore more that this content in massive and stockwork ore facies. Fe and Cd content of sphalerite from center to margins were increase which is reflecting drop in temperature of ore-forming fluid over time. Also geochemical features of sphalerite and pyrite suggest that they are formed in anoxic environment.