

Relationship between Nano-Micron Particles Observed by Scanning Electron Microscopy(SEM) and Electro-Geochemical Anomalies

BINBIN SUN¹

¹Institute of Geophysical and Geochemical Exploration,
CAGS, Langfang 065000, Hebei, China;
sunbinbin@igge.cn

As an effective means in geochemical exploration of mineral resources for covered areas, the Electro-geochemical Method is increasingly being applied. However, with the continuous advancement of method and technology, research on its formation mechanism of anomalies has been lagging behind. The viewpoint that the electric field drives the metal ions associated with the deep ore body to the adsorption electrode has been a mainstream understanding. Through exploration experiment on several lead-zinc polymetallic ore deposits, the authors found that the electro-geochemical anomalies of trace elements are often consistent with the major elements, such as Fe and Al. Further, through scanning electron microscopy (SEM) observation, a large number of ubiquitous colloidal particles such as clays ranging in size from several hundred nanometers to several tens of micrometers were found in the electro-geochemical polyurethane foam samples. In addition, metallic gold particles were found in the foam samples for exploration experiment of gold deposits in covered area. The particle size ranged from tens of nanometers to one or two micrometers. Combined with the characteristics of the occurrence state of elements in the soil before and after electro-extraction, it is judged that the electro-geochemical anomaly may be largely caused by these nano-micro elemental or mineral particles, rather than the "ion" in traditional viewpoint.