

China Geological Survey Proved the Existence of an Extra-large Coal-Associated Lithium Deposit

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The most Li deposits were found in lake waters or igneous rock. In recent years, anomalous concentrations of lithium in coal have been reported by several coal geologists (Sun et al., 2010, 2012a, 2013a; Dai et al., 2012). Some coal geologists argued that these concentrations have economic significance (Sun et al., 2012b, 2013b, 2014). This discovery has even been reported by Khanchuk et al. (2013) in “The Newsletter of Society for Organic Petrology”, and the report was reprinted by the Geospectrum of the American Geosciences Institute (Geospectrum, 2014). However, before 2013, it has not been proven whether it is only a local concentration of lithium or an enriched coal-associated lithium deposit.

From 2012 to 2013, China Geological Survey established a project (Resource exploration of lithium and gallium in Pingshuo District, Shanxi Province) to investigate lithium enrichment in the Pingshuo coal. The project was completed by The Special Exploration Team of China Coal Geological Survey.

The study area of the project, Pingshuo mine district, covers an area of 396 km². The total coal reserves reaches up to 13 billion tons. A total of 835 coal samples were taken from the Pingshuo (Pinglu-Shuoxian) Mining District in northern China. The highest Li and Ga contents reach 960 and 68 mg/kg, respectively. According to the Geology and Ore Deposit Standard Specifications for Rare Metal Mineral Exploration of the People's Republic of China (DZ/T 0203-2002), Li and Ga contents have reached a level of associated Li and Ga deposits in the Pingshuo mine district. The total Li reserves reached 1072500 tons and total Ga reserves reached 165200 tons. Both of them belong to extra-large deposits (Sun et al., 2013). The Li concentration is mainly related to inorganic matter. The minerals in the coals consist of kaolinite, boehmite, chlorite-group mineral, quartz, calcite, pyrite, siderite and amorphous clay material. Some Li could be absorbed by clay minerals in the Li-bearing coal seam. The chlorite phase could be most likely the host for a part of Li. The Yinshan Oldland significantly influenced the sedimentation of the basin and could be the

most possible source of Li of the coal.

On 26 November 2013, China Geological Survey organized a group of coal geologists and ore deposit scientists to evaluate the project. They have concluded that both Li and Ga have enriched extra-large coal-associated deposits. This is the first proven coal-associated lithium deposit in the world.

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