The REE characteristic and ore-forming fluid study in Dabao Hill poly-metallic deposit, north of Guangdong

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The polymetallic deposit of Dabaoshan Hill was a typical sulfide deposit which located at SiHui-Wuchuan default, northern of guangdong. This study mainly concerned about significantly different REE characteristics of the vast-thick and vein-type sulfide. Vast-thick deposit with similar characteristics of the modern submarine black chimney and white chimney of hydrothermal fluid showed positive Eu anomalies (Fig.1), while ∑LREE/∑HREE has medium differentiation,which might be ancient hydrothermal vents formed. Some sample Ce has negative abnormal that implied seawater adding in the metallic process.However,the REE differentiation of vein-type deposit has evident Eu negative abnormal (Fig.2), ∑LREE/∑HREE varied from 1.47~24.66, which has essentially consistent with the upper stope. Vein-type ore-forming fluid might be from granitic magma. Different associated sulfide and eroded sulfide with strong LREE differentiation suggested that mineralization may be related to the latter metallic environment and the diversity of the granite differentition.

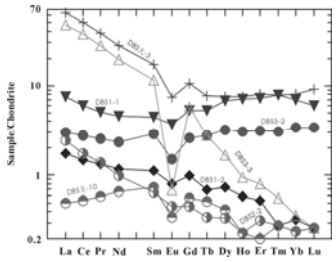

Figure 1: Chondrite-normalized REE patterns of sulfide from layered ore body.

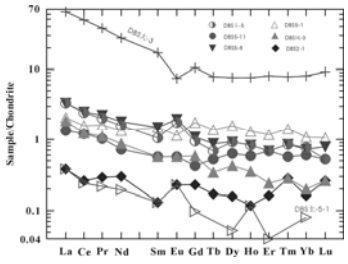

Figure 2: Chondrite-normalized REE patterns of sulfide from vein-type ore body.

Effect of ventilation on the concentrations of gaseous sulfur and sulfate aerosol in an urban valley

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Data and Methods

The environmental behavior of gaseous sulfur compounds (GSCs such as reduced sulfur compounds (RSCs: H_2S, DMS, DMDS, and CH_3SH) and SO_2) and sulfate aerosol was investigated based on a numerical modeling approach. RSC emission concentrations were measured from 8 source sites (S1-S8) around the urban valley, Korea during fall season. Two simulation cases were selected to compare the effect of ventilation on the concentrations of GSCs and sulfate aerosol in the study area. Details for the two cases were assigned as: (1) the ventialtion (V) condition with a high wind speed and mixing height and (2) the non-ventilation (NV) condition with a low wind speed and mixing height. The impact of the photochemical oxidation of RSCs on air quality was assessed by two sets of scenarios: the estimation of SO_2 concentrations (1) with (CHEM) and (2) without the photochemical oxidation of the RSCs (BASE). The contribution of individual RSCs to the production of SO_2 concentration levels from 8 sites was also compared.

Discussion of Results

The relative contribution of RSC oxidation to the formation of SO_2 for the V condition was evaluated at the 8 locations (Fig. 1). Photochemical production of SO_2 was dominated by DMDS (~60% of total contributions) at the S1-S5 locations and CH_3SH (~60%) at the S6-S8 locations. Further results regarding sulfate aerosol may be obtained if the model simulation is finished before the conference.

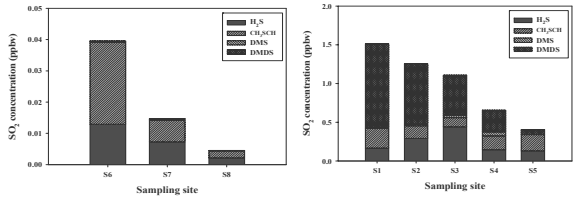

Figure 1: The relative contribution of RSC oxidation to the formation of SO_2 for the V condition at (a) five (S1-S5) and (b) three (S6-S8) locations during the day period.