

Sulfide Inclusions in Mantle Minerals from Xinchang, Zhejiang, China

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Tertiary alkali-basalt strata occur widely along regional northeast fault in Shengxian-Xinchang counties, Zhejiang province, with 400km² of total square. Mantle xenoliths were captured within some alkali-basalt strata, dominantly comprised by spinel lherzolite. Rock samples for this study were collected from Caijiawan town of Xinchang county and were made into polished thin section, so that they could be observed under both polarizing microscope and ore microscope. There exist many sulfide-melt inclusions in olivine and pyroxene grains of xenoliths. The shape of an inclusion is vermicular or oval, with 5~20μm in size. Those inclusions usually contain two phases, sulfide and silicate glass phases, or only one sulfide phase. EPMA analysis has been applied to detect components of sulfide-melt inclusions. The result showed those sulfide phases of inclusions are mainly pentlandite, and secondarily pyrrhotite. Ni/Fe of mineral phases in sulfide inclusions is related to olivine contents in host mantle xenoliths. Ni/Fe and (Fe+Ni)/S of sulfides have a normal correlation, (Fe+Ni)/S becomes higher with the increasing of Ni/Fe. While in Hannuoba, because of various host xenoliths, there is no obvious correlation between Ni/Fe and (Fe+Ni)/S. Ni/Fe, (Fe+Ni)/S and Ni contents are increased from the center to edge in single sulfide-melt inclusions, because of different cooling speed. Compared with the data from Hannuoba, West Eifel of Germany and Nograd-Gomor of east Europe, the average composition of sulfide inclusions from Xinchang is characterized by Ni-rich and Cu-poor. While that of Hannuoba is characterized by Cu-rich, and that of West Eifel is characterized by Fe-rich and Ni-poor. This average composition difference of sulfide-melt inclusions from various districts may indicate a regional characteristic of fluid components in upper mantle.