

Geochemical Behavior, Dispersion and Enrichment of Fluvial Sediments depending on the Size Distribution

Hyun Koo Lee, Aeran Cho*, Chan Hee Lee
(Department of Geology, Chungnam National University)
e-mail : phklee@hanbat.chungnam.ac.kr

Geochemical characteristics of the fluvial sediments were investigated on the basis of major, some minor and rare earth elements chemistry. Ratios of $\text{Al}_2\text{O}_3/\text{Na}_2\text{O}$ and $\text{K}_2\text{O}/\text{Na}_2\text{O}$ of the sediments have a homogeneous value, and are partly positive correlation against $\text{SiO}_2/\text{Al}_2\text{O}_3$, respectively. Characteristics of some minor elements (V/Ni , Cr/V , Ni/Co and Zr/Hf) are revealed a lower and narrow range. These suggested that sediments source could be due to acidic to intermediate granitic rock, and may be explained by simple environment of weathering and sedimentation. Major elements variations with increasing SiO_2 are typified by decreasing Al_2O_3 , Fe_2O_3 , CaO and MgO , and increasing K_2O and Na_2O . Minor elements variations of Ba, Be, Cs, Cu, Li, Ni, Sr, V and Zr show comparatively normal negative and some positive trends. Based upon mean composition of granite, major elements of the sediments were highly enriched Al_2O_3 , TiO_2 , Fe_2O_3 , MnO , CaO and MgO . Among some minor and rare earth elements were enriched As, Cd, Cu and V, but depleted of Be, Ce, Rb, Sc, Sr and Zn as compared with average composition of granite. By decreasing of particle fractions, SiO_2 , Rb and Sr contents are with decreasing, however, increasing with Al_2O_3 , Fe_2O_3 , CaO , MgO , TiO_2 , MnO , P_2O_5 , Be, Cu, Hf, Ni, Pb, V and Zr. Between size fractions and elemental correlations, elements of Fe_2O_3 , CaO , MgO , P_2O_5 , Cu, Ni, Zn and Zr showed typical trends in the secondary contamination of sediments. These trends are typically shown under 100 mesh fractions. Its indicates that the under 100 mesh materials are the optimum size fractions for the geochemical and environmental survey.