

Petrographic compositions of Paleozoic coals of Mongolia

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In Mongolia, the deposition of coal bearing strata commenced in Pennsylvanian, and continued in Upper Permian, in Lower-Middle Jurassic and finally in Lower Cretaceous time. Pennsylvanian coal seams were deposited in Western Mongolia, where peat formation was initially developed in the southernmost part and later gradually shifted to northward. By the Late Permian, the locus of coal formation had changed and main peat accumulation took place in southern Mongolia. Lower-Middle Jurassic coal was accumulated in western, northern and eastern Mongolia. During this time, peat forming condition was comparatively stable in entire Mongolia. In the Early Cretaceous, thick and extensive coal was formed in the Eastern Mongolia. Due to this general trend of peat accumulation, coal rank decreases from west (bituminous) to east (lignite).

The significant portion of Pennsylvanian and Upper Permian coal reserves, existed in western and southern Mongolia, are coking coal. Thus, petrographical studies of the coals are notably important. However, previous studies of Paleozoic coals have been sparse, and only few deposits have been conducted.

The maceral compositions of Western Mongolian Pennsylvanian coals such as Khushuut, Maanit, Khurengol, Zeegt, Tsagaangol, Nuurstkhotgor, Khartarvagatai and Olonbulag were studied. The results show that the coals are dominated by vitrinite (45 vol.% to 71 vol.%) and inertinite (28 vol.% to 53vol.%) macerals. Liptinite contents are low, less than 4 vol.%. In addition, vitrinite reflectance values (R_{max} in oil) of Khushuut (1.85%), Maanit (0.92%), Khurengol (1.4%), Zeegt (0.86%), Tsagaangol (3.6%), Nuurstkhotgor (0.9%), Khartarvagatai (1.1%) and Olonbulag (1.7%) were determined. Upper Permian coals in southern Mongolia (Tavantolgoi, Nariinsukhait, Jargalant, Tsagaantolgoi, Buduuniikhyar) are dominated by vitrinite (55 vol.% to 78 vol.%) and inertinite macerals (19 vol.% to 44 vol.%). Liptinite contents range from 1 vol.% to 7 vol.%. The vitrinite reflectance values of Tavantolgoi and Nariinsukhait coals vary from 0.7% to 1.2% and from 0.7% to 0.8%, respectively.