



## Petrography, palynology and depositional environment of Gelibolu coals, NW Turkey

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Upper Oligocene and Miocene coal samples collected from two outcrops in the Gelibolu Peninsula, NW Turkey were analyzed petrographically and palynologically to determine the depositional environment of the coals. Microscopic studies reveal that the studied coal samples from both locations are characterized by high amount of huminite group macerals, ranging from 46 to 78% (mineral-included basis). The prevailing maceral from this group is gelinite (31-65%), it can be easily seen on all studied samples, indicative of high gelification degree of organic matter. Relatively low amount of liptinite (does not exceed 9%) and inertinite (does not exceed 8%) are also observed in the coals. The mineral matter content is variable but generally high, varying from 5 to 37%, as in other Turkish coals and consists mostly of clay minerals, quartz, calcite and pyrite. The mean reflectance values range from 0.502 to 0.564% suggesting that rank of coal is subbituminous (ASTM). The chemical properties of coal including calorific value, volatile matter and fixed carbon content are also in accordance with rank of coal. Facies indices based on maceral ratios (Tissue Preservation Index vs. Gelification Index and ABC ternary diagrams) were used to interpret to depositional environment of coals. Low tissue preservation index (TPI) and high gelification index (GI) values are observed. These indices indicate that the coals deposited in limnic environment. High pH and strongly reducing conditions inferred from the presence of framboidal pyrite and also evidenced by low TPI values. The palynological assembly of the coals dominated by angiosperm pollen and spore, however, gymnosperms were rarely seen. Herbaceous/sedge plants are common in Miocene coal samples.