

## 7.7 THE GEOCHEMISTRY OF CLAYS ÇAVUŞÇUGÖL (ILGIN, KONYA)

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### ABSTRACT

The Harmanyazı graben and the Çavuşçugöl graben, located in the north of Ilgın district of Konya province, host clay formations, which are the main subject of this study. The Harmanyazı graben is a fault controlled basin and widespread an approximately east-west direction. Çavuşçugöl graben, on the other hand, is a large basin bounded by the north-south diirection Ilgın fault in the west and approximately north-south direction Tekeler fault in the in the east. Over time, as these basins became lake environments, phyllites and metasandstones belonging to the Bahçecik formation and Bağrıkkurt formation, which surrounded the basins, started to accumulate in the basin. Lignite coals were formed in both basins in the lakeside swampy environment and in semi-tropical climatic conditions. Due to the formation of lignite coal, with the effect of groundwater, humic acid flowed onto the clastic material previously transported to the basin floor from the surrounding units, and this humic acid enabled the muscovite and arkosic material in the phyllite and metasandstones of the Bahçecik Formation and the Bağrıkkurt Formation to become clay with the contribution of hydrothermal processes. During clay formation, Al, which is immobile in the phyllites and metsandstones belonging to the Bahçecik and Bağrıkkurt formations, was enriched in the illite, kaolinite and pyrophyllite minerals of the Çavuşçugöl clays, while K was enriched in the illite mineral. In the study area, the Harmanyazı graben is the place where the upper-coal clays are clearly observed, while the under coal clays are observed more clearly in the Çavuşçugöl graben. While illite is the most common mineral at both levels, the ratio of other kaolinite and quartz is higher in the upper-coal clays, while the rate of pyrophyllite is higher in the under-coal clays. This is due to the conversion of kaolinite and quartz in the under-coal clays to pyrophyllite and water by burial diagenesis and hydrothermal effects.

**KEYWORDS:** Clay, coal, geochemistry, Konya, Ilgın