



## **Organic facies characteristics of the Carboniferous Pamucakyayla Formation, western Taurus, Antalya Nappes, Kemer (Antalya/Turkey)**

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The study area is located in the western part of the Taurus Belt (SW Turkey). This region exhibits a complex structure involving two autochthonous units surrounded and imbricated with three allochthonous complexes. Antalya Nappes is a complex tectonic imbricate structure including sedimentary and ultrabasic rocks. In this study, organic facies characteristics of Carboniferous coaly units in the Pamucakyayla region (Kemer, Antalya–Turkey) were examined. The Carboniferous Pamucakyayla Formation, which is characterized by sandstone, claystone, marl and coaly units. This units includes different levels of coal seams in different thicknesses. Organic matter is composed predominantly of woody and amorphous material, with a minor contribution of planty and coaly material. Kerogen in the deposits is type II/III, as indicated by organic petrographic observations and Rock-Eval data. Total organic carbon (TOC) values are generally between 0.01 and 1.44 %, but reach 5.81 % in the formation. Tmax values vary between 446 and 451 °C and indicate mature zone (Based on the value of 0.25 % TOC). Organic facies type BC, C and CD were identified in the investigated units. Organic facies BC is related sandstone and marl lithofacies. This facies is deposited under an anoxic water column in a fine grained clastics, where rapid deposition creates anoxia in the sediments after deposition. This facies is characterized by average values of HI around 317 (equivalent to type II kerogene), TOC around 0.02 %, and an average of S<sub>2</sub> of 0.04 mg HC/g of rock. Organic facies C is related to sandstone, marl and coal lithofacies. This facies is characterized by average values of HI around 176 (equivalent to type III kerogene), TOC around 0.19 %, and an average of S<sub>2</sub> of 0.03 mg HC/g of rock. The organic matter is partly oxidized, and terrestrial. Organic facies C is the “gas-prone” facies. Organic facies CD is related to limestone, marl and coal lithofacies. This facies is characterized by average values of HI around 109 (equivalent to type III kerogene), TOC around 1.21 %, and an average of S<sub>2</sub> of 1.43 mg HC/g rock. The organic matter is oxidized and reworked.

**Key Words:** Western Taurus, Carboniferous, Pamucakyayla, Antalya Nappes, Organic Facies