# Geochemistry of a source rock - dominated Late Triassic coals: A case study of the Dabaoding Coal Mine in Panzhihua, Sichuan Province, southwestern China

PING CHEN, YOUBIAO HU, JIAN CHEN, JIDUN SHA

School of Earth and Environment, Anhui University of Science and Technology, Huainan, Anhui 232001, China

The geochemistry of a source rock - dominated coals from the Late Triassic Daqiaodi Formation in the Dabaoding coal mine of southwestern Sichuan province was investigated. A total of 15 coal samples, 6 parting, 4 roof and floor rock samples from the D15-3 and D18 coals were subjected to proximate and ultimate analyses, LTA-XRD with Siroquant software for mineral identification, XRF for major element oxides, ICP-MS for trace elements, ICP-CCT-MS for As and Se, ISE for F, and DMA-80 analyzer for Hg.

Results show that the sediment source rock of the Daqiaodi coal-bearing strata is the intermediate rocks at the top of the Kangdian upland. Most trace elements in the Dabaoding coals are depleted or at normal levels (except for Cr, slight enrichment) relative to Chinese coals or world hard coals. Rare earth elements and yttrium distribution patterns, indicating a positive Ce anomaly, negative Eu anomaly, positive Y anomaly, and Gd-maximum in the majority of non-coal host rocks, were inherited from the source rocks. $Ce^{3+}$ was oxidized into $Ce^{4+}$ in the sediment source area during weathering and/or transportation, and the $Ce^{4+}$-enriched water and some terrigenous detritus were transported into the coal-accumulating basin. Parting rocks D15-3-5p, D15-3-6p, and D15-3-7p were suffered from the leaching of groundwater or hydrothermal fluid, causing a negative Ce anomaly. The intermediate rocks in sediment source area with an intrinsic negative Eu anomaly imprinted the anomalous europium in coalbeds. However, some samples, e.g. D18-4p and D15-3-10c, with a positive Eu anomaly, were speculated to be affected by hydrothermal fluid. The positive yttrium was related to hydrothermal solution as well, while the positive Gd anomaly was ascribed to the influence of acid waters circulating in coal-accumulating basin.