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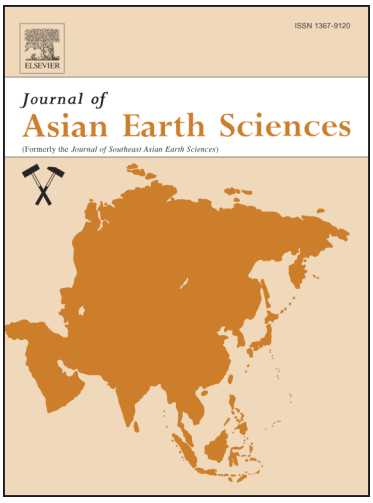

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A Magmatic-Hydrothermal Lacustrine Exhalite from the Permian Lucaogou Formation, Santanghu Basin, NW China – The Volcanogenic Origin of Fine-Grained Clastic Sedimentary Rocks

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ABSTRACT

Shales in the middle Permian Lucaogou Formation in the intracontinental Santanghu rift basin have been considered as “typical” organic-rich profundal shales for decades. Our study of well cores using petrographic microscope and scanning electron microscopy suggests an otherwise complex hydrovolcanic and hydrothermal origin. This paper describes characteristics of a particular type of the shales, composed of fine-grained detrital minerals and lithic grains. Some of them are orthopyroxene, calcite, peralkaline feldspars, and analcime that are interpreted as derived from peralkaline-alkaline carbonatite, pyroxenite, analcime phonolite, and andesite, whereas others are quartz, dolomite, ankerite,