

Rare Earth Elements Could Be A Useful Geochemical Tracer in Formation Hydraulic Fracturing Schemes for Enhanced Gas and Oil Production

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A reliable geochemical tracer has yet to be developed which can be beneficial to hydraulic fracturing schemes for enhanced production of gas and oil from organic rich shale beds. Our preliminary study on rare earth elements in various fluids collected from a project of hydraulic fracturing of Woodford Shale at a location (Sec 21, T1N, R10E) in Coal County, Oklahoma shows that relative rare earth distribution patterns of temporally different back-flow frac-fluids, normalized to pre-frac fluid used, could prove to be a useful geochemical tracer, giving additional insights into the geometry of the induced fracture system. The tracer can be particularly useful to determine whether or not induced fractures from a hydro-fracturing event might have been extended to adjacent stratigraphic units beyond the production formation.