

# SEG 2024 Conference: Sustainable Mineral Exploration and Development

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## Lithium Clays in Volcano-Sedimentary Deposits

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The increasing lithium demand for the manufacture of Li-ion batteries is driving the interest of the mining industry toward the exploration of new types of resources, in addition to more typical salar and spodumene-rich pegmatite deposits. Volcano-sedimentary Li deposits represent an unconventional and still untapped Li resource, where Li is bound in mineralogically complex assemblages largely dominated by clay minerals, and more rarely by other exotic phases such as borosilicates and phosphates. Lithium has been known about in volcano-sedimentary systems for several decades, although the nature of clay-type Li mineralization (e.g., small particle size and historical processing difficulties) has hampered the development of this ore type, driving the industry investments towards more amenable spodumene and brine deposits. However, the ongoing increase of the Li demand coupled with the development of low-temperature acid leaching technologies has led to a resurgence in the interest towards volcano-sedimentary Li ores. Therefore, in this contribution we describe the nature of Li-rich clay minerals from selected volcano-sedimentary deposits including Jadar (Serbia), the McDermitt deposits (US) (i.e., Jindalee Ltd. and Lithium Americas tenures), and other globally significant systems. We summarize the mineralogical and geochemical diversity to be expected in clay-type mineralization, and the consequent implications for genetic processes and Li grade continuity.