

The addition of trivalent cations (Ce), in the APS minerals structure is possible by an increase in phosphate above one formula unit at the expense of sulphate (Stoffregen & Alpers, 1987)⁽¹⁹⁾, such as is seen in the florencite structure.

The structure of APS minerals are suitable for REE, Sr and Ba substitution, since metal cations are situated in large cavities formed by 6-membered rings of $M(O,OH)_6$ octahedra (Radoslovich & Slade, 1980)⁽¹⁴⁾.

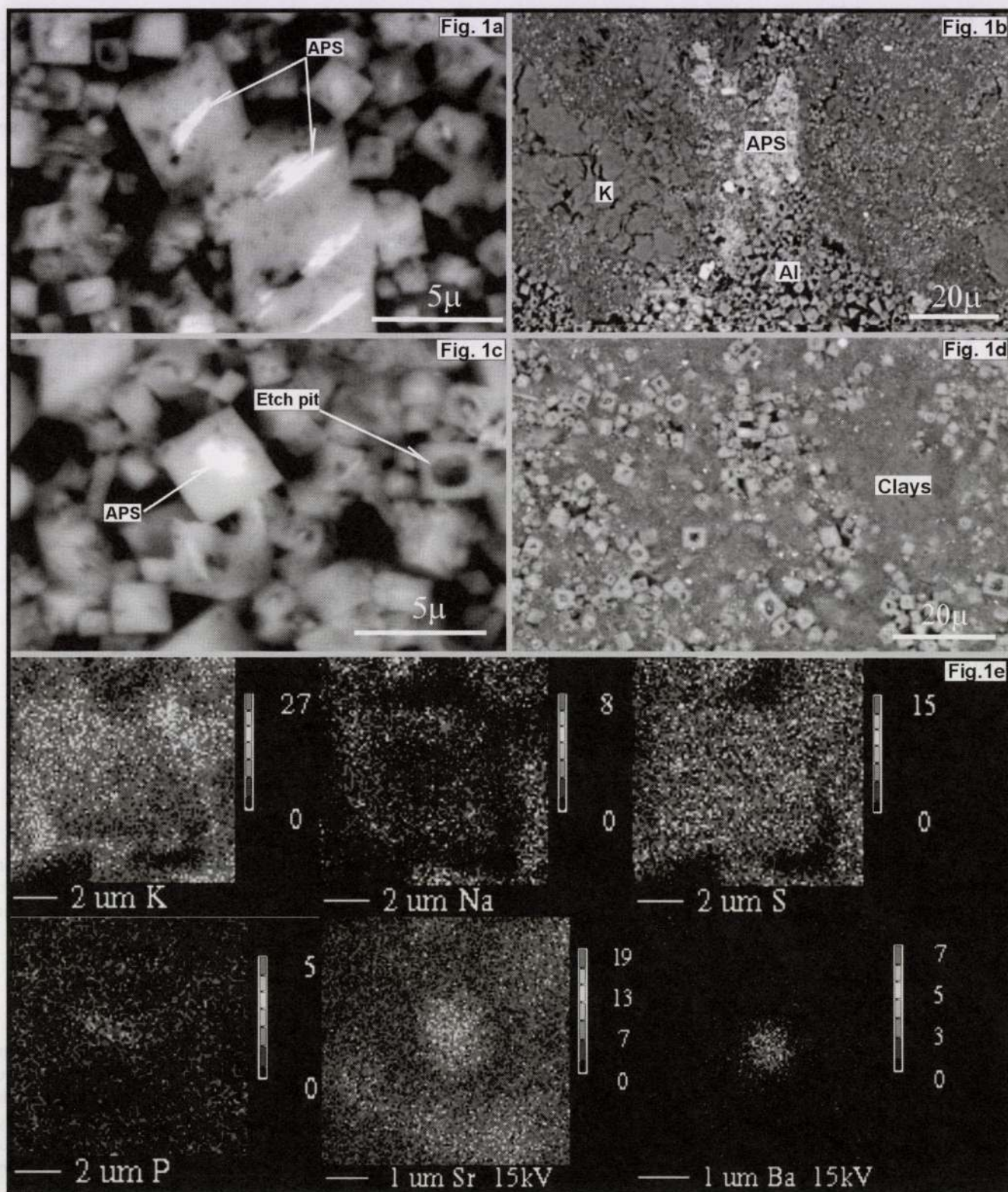


Figure 1 (a)–(d) Backscattered Electron Images (BEI): (a) and (c) show brighter inclusions in pseudocubic Na-alunite. These inclusion contain P, Ba, Sr, Ca and REE. (b) and (d) show the texture of the AAA where APS minerals present as aggregates. Al: alunite; K: kaolinite. In (b), (c) and (d) pseudocubic Na-alunite crystals exhibit irregular holes, etch pits, often placed at their cores. (e) Compositional mapping of a pseudocubic Na-alunite crystal showing P, Na, K and S distribution. Phosphorous is highly concentrated at the APS minerals inclusion where sulfur is almost absent. Sr and Ba shown in the lower chemical maps correspond to another pseudocubic Na-alunite crystal.

