## Mineral fabrics and emplacement of Permian and Jurassic arc plutons from the southern Colombian Andes

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## Abstract:

Mineral fabric analyses of Permian La Plata and Jurassic Paez arc plutons provide information about the interplay of tectonic deformation and magma emplacement in the southern Colombian Andes. We combined field mapping, microstructural data, AMS fabrics, rock magnetic properties, vorticity analysis, and thermobarometry to study the internal fabrics of the plutons. Our results indicate that the studied plutons have well-developed NE magmatic and mylonitic foliations, with the latter being distinctive for the Permian pluton. These foliations are consistent with the N65°E/63°W Permian and N43°E/82°W Jurassic AMS magnetic fabrics. Magnetic lineations record subhorizontal (Permian) and vertical (Jurassic) magmas upwards in the NE-SW trajectories. The orientations of all the plutonic fabrics indicate structurally controlled magma emplacement consistent with compressional tectonics and bulk NW-SE crustal shortening. Microstructural features recorded in the plutons reveal magmatic to sub-magmatic and solid-state deformation developed at high- to low-temperatures during their syn-tectonic emplacement history. Thermobarometric calculations indicate similar shallow emplacement conditions (~10 km depth) in the La Plata and Paez plutons. The application of vorticity analysis shows that the magnetic fabrics and syn-emplacement of the Permian pluton developed by simple-shear dominated dextral transpression, whereas the AMS fabrics for the Jurassic syn-tectonic intrusion may have been associated with pure-shear contractional deformation.