

**THE MAFIC- ULTRAMAFIC ROCKS AND SURROUNDING BASEMENT OF THE
LA HUERTA AND VALLE FERTIL RANGES, SAN JUAN, ARGENTINA**

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The La Huerta and Valle Fertil ranges (30° 00'-31° 27' S, 66° 18'-68° 09' W), Western Sierras Pampeanas, province of San Juan, Argentina, mainly consist of metamorphic and igneous rocks. The Proterozoic-Lower Paleozoic (Pampean) metamorphic basement is made up of Grt-Bt ± Sil ± Crd ± Kfs paragneisses. This grades into migmatites, amphibolites and Fo ± Dio ± Per marbles to the north. The igneous rocks intruded the metamorphic basement in the Early-Middle Ordovician (Famatian orogeny), when the Cuyania (Precordillera) and Pampia terranes collided. The entire La Huerta and Valle Fertil ranges were affected by a penetrative NNW-SSE trending foliation. Mafic-ultramafic outcrops form small bodies ranging from ten to a few hundred meters width within the more felsic metaigneous rocks. Field observations suggest a synplutonic origin in the partially crystallized felsic magma. The mafic-ultramafic rocks are mainly massive, dark-colored and coarse-grained (up to 4 cm). They are commonly cut by narrow mafic dikes (microgabbros) which exhibit chilled margins, suggesting that the mafic rocks were cool at the time of intrusion of the dikes. The dominant rock types are metagabbro norites and olivine-metagabbros. Pyroxenites are dominant among the ultramafic varieties (peridotites, hornblendites and lherzolites). Sometimes these rocks display relic igneous textures (allotriomorphic to hypidiomorphic-granular), in some cases of cumulate type. Occasionally, a rhythmic layering is observed in the field. However, most of these rocks are strongly recrystallized and primary mafic minerals are almost completely replaced by metamorphic amphibole. The mineralogy comprises Ol (Fo₈₃₋₇₅) and Pl (An₁₀₀₋₉₉ in most samples) considered to be igneous relics, with accessory Ilm and Mag. Abundant coronas of Opx (En₈₂₋₇₆Fs₁₈₋₂₃Wo₀₋₁) + Al-rich Spl and Cpx (En₄₇₋₄₄Fs₆₋₈Wo₅₀₋₄₆) + Al-rich Spl rimming olivine are present. Ca-rich Amph (Mg-hastingsite and pargasite) + Al-rich Spl is present as external rim of these coronas. At Ol-Pl boundaries the complete Ol → Opx ± Spl → Cpx ± Spl → Amph + Spl → Pl reaction sequence can be observed, indicating a continuous metamorphic evolution as the result of slow cooling of the mafic-ultramafic bodies. Observed textures suggest reequilibration from lower granulite to upper amphibolite facies conditions during cooling, but preservation of relic magmatic textures demonstrates that the mineral transformations took place under conditions of little or no strain. Later, local mylonitization along discrete NW-SE to NNW-SSE striking ductile shear-zones occurred. Finally, the metagabbros became locally and partially replaced by retrograde low-T hydrated minerals.

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