

## GEOCHEMISTRY OF UPPER PALEOZOIC-LOWER TRIASSIC GRANITOIDS OF CENTRAL FRONTAL CORDILLERA, ARGENTINA

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**RESUMEN:** Nuevos análisis químicos de granitoides del Paleozoico superior-Triásico inferior del sector central de la Cordillera Frontal de Argentina, muestra que se trata de rocas metalumínicas a levemente peralumínicas, con diópsido normativo. El alto valor promedio de Na<sub>2</sub>O (4.3 %), la presencia de hornblenda y esfena modal así como una relación A/CNK < 1 indican que pertenecen a los granitoides de tipo I. La abundancia y las relaciones entre los elementos mayoritarios y minoritarios permiten señalar que estas rocas integraron un arco magmático sobre corteza continental en el margen Pacífico del sector central de Chile y Argentina, generado por la implantación de un sistema de subducción activo durante el Paleozoico superior-Triásico inferior.

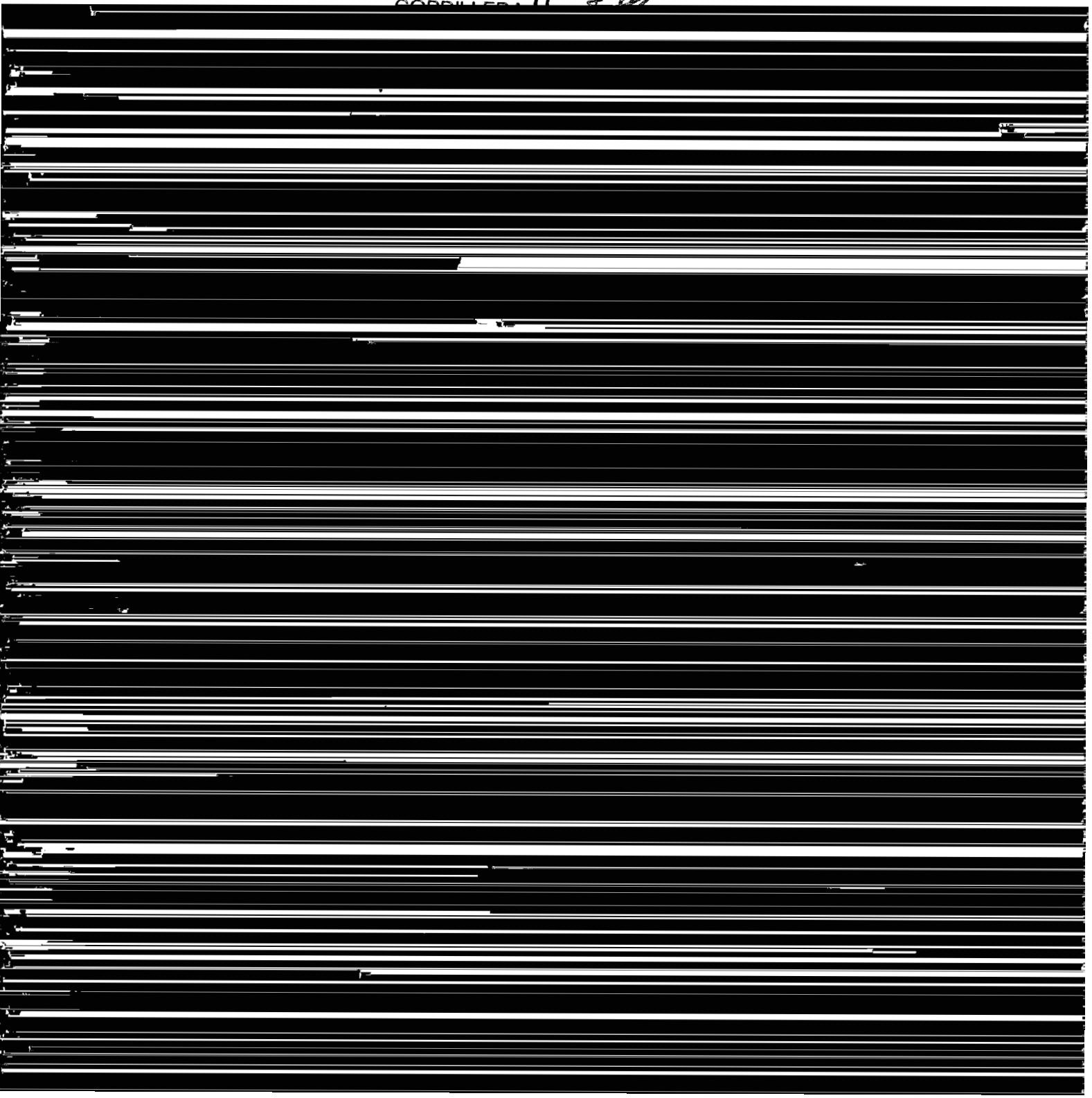
**KEY WORDS:** Geochemistry, granite, Frontal Cordillera, Argentina.

### INTRODUCTION

Upper Paleozoic-Lower Triassic intrusive rocks crop out in the Frontal Cordillera of Argentina and Chile, between 27°S and 34°S. Although detailed field, petrological, geochemical and geochronological studies of granitoids have been carried out in the northern portion (29°S to 32°S) of Frontal Cordillera (Llambías et al., 1987; Nasi et al., 1985; Parada, 1988; Parada et al., 1991) relatively scarce geochemical and petrological data are available in the southern sector to

Portillo area, the Las Cuevas Stock, Las Delicias Stock and the Cordón del Portillo Batholith were recognized, as is showed in the figure.

FRONTAL  
CORDILLERA



## GEOCHEMISTRY

Twenty seven samples of Guevara and Los Tábanos Stocks and Cordón del Portillo Batholith (Cerro Punta Blanca, Cerro Punta Negra, Quebrada del Portillo), collected mainly through east-west traverses along rivers, were analyzed for major and trace elements concentrations. The rocks have typical compositions of calc-alkaline magmatic suites, ranging from metaluminous quartz-monzonite to moderately peraluminous granites. The co-variation of element oxides with  $\text{SiO}_2$  of different stocks shows that decreasing trends exist for nearly all the major and trace elements, except for  $\text{K}_2\text{O}$ ,  $\text{Na}_2\text{O}$  and  $\text{FeO}^*$  where a considerable scatter occurs. This fact may partly be due to incipient post-magmatic alteration processes (e.g. albitization). Harker variation diagrams show decreasing trends with two clusters of samples in the range 61 to 70 %  $\text{SiO}_2$ , and 73 to 76 %  $\text{SiO}_2$ .

The co-variation of Rb vs. K/Rb supports the idea that all samples are part of a cogenetic suite, where a general differentiation trend from quartz-syenite and quartz-monzonite to granodiorite, granite and alkali-feldspar granite seems to exist. Chemical and mineralogical properties such as the relatively high  $\text{Na}_2\text{O}$  content (4.3 % average), A/CNK ratio < 1.1, normative diopside, modal hornblende and sphene and a broad spectrum of composition, show as these rocks may be interpreted as I-type granitoids (Chappell and White, 1974).

According their Rb-Ba-Sr relationships, the 80 percent of them are granodiorites and quartz-diorites whereas the rest are granites. A late-orogenic trend with R2 approximately constant and a broad range of R1, as result of major variation of total alkalis, was identified using the R1-R2 diagram.

Tectonic discrimination diagrams after Maniar and Piccoli (1989) classify the rocks studied as IAG + CAG, whereas that ocean ridge granite (ORG) normalized multi element variation diagrams

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