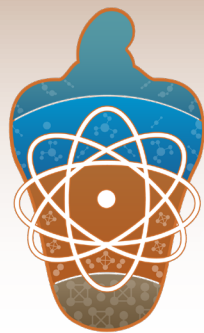


# ANAIS XIX CBGq

XIX Congresso Brasileiro de Geoquímica



## XIX CBGq

Congresso Brasileiro de Geoquímica

**Geoquímica, Ciência e Sociedade**

09 a 11/Agosto/2023 ARACAJU / SERGIPE

ISBN: 978-65-00-72908-5

CDL



9 786500 729085

# WHOLE ROCK GEOCHEMISTRY (X-RAY FLUORESCENCE AND INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY): A COMPARATIVE INSIGHT USING MICA SCHIST FROM BRUSQUE COMPLEX (SÃO MIGUEL BEACH - PENHA-SC)

Lorena de Toledo Queiroz, Valdecir de Assis Janasi, Miguel Angelo Stipp Basei, Lucas Ramos Tesser

Instituto de Geociências/ Universidade de São Paulo - lorena.toledo@usp.br - vajanasi@usp.br - baseimas@usp.br - ltesser@usp.br

The aim of this study is to utilize X-ray fluorescence (XRF) and inductively coupled plasma mass spectrometry (ICP-MS) techniques to determine the geochemical composition of major, minor and trace-elements in chloritoid-kyanite-muscovite-schist from the Brusque Metamorphic Complex, a metasedimentary domain of the Dom Feliciano Belt in southeast Brazil. By utilizing the chemical composition of the whole rock system, it was possible to classify these metasedimentary rocks. Additionally, the study allowed a comparison of results from several trace-elements that were analyzed by two different techniques. The analyses were conducted at NAP Geoanalítica-USP using four samples from the same outcrop located at São Miguel Beach, Penha-SC. Fused glass discs were used for measuring major elements, while pressed powder pellets were employed for the analyzes minor and trace elements by XRF analyses. ICP-MS analyses were performed in the same samples using solutions prepared through acid digestion in microwave. Major elements analysis reveals that these rocks have a range of  $\text{SiO}_2$  (54.85 - 88.01 wt.%),  $\text{Al}_2\text{O}_3$  (5.14 - 25.97 wt.%) and  $\text{Fe}_2\text{O}_3$  (3.71 - 9.87 wt.%) and the concentrations of  $\text{TiO}_2$ ,  $\text{MnO}$ ,  $\text{MgO}$ ,  $\text{CaO}$ ,  $\text{Na}_2\text{O}$ ,  $\text{K}_2\text{O}$  and  $\text{P}_2\text{O}_5$  are lower than 3 wt.%. It can be concluded that the geochemistry reflects the mineralogy with muscovite, kyanite and chloritoid and the variation in the chemistry reflects different compositional domains in the outcrop, which were characterized as ranging from pelite, pelite rich in Fe and sandstone rich in Fe. Furthermore, the concentration of Zr obtained using XRF in these samples (231 to 1435 ppm) suggested that zircon is a common mineral in these rocks, and it was interpreted by a sedimentary concentration of heavy minerals phase. On the other hand, the high Ba concentration (256 - 1006 ppm) it was interpreted as an alkaline element that is not solubilized in weathering. A comparison between the two methods, we observed some elements obtained by ICP-MS shows much lower results, such as Zr (25.6 - 283 ppm) and Y (11 - 148 ppm for XRF and 2.98 - 17.46 ppm for ICP-MS) which are associated with the partial dissolution of strong refractory minerals using acid digestion. Trace-elements not associated with a refractory mineral show good agreement between the two techniques.

**KEYWORDS:** BRUSQUE COMPLEX, ICP-MS, X-RAY FLUORESCENCE

**SUPPORT:** FAPESP