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

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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 Geoanalitica-USP using four samples from the same outcrop located at São Miguel Beach, Penha-SC. Fused glass discs were used for measuringmajor 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 inmicrowave. Major elements analysis reveals that these rocks have a range of SiO_2 (54.85 - 88.01 wt.%), Al_2O_3 (5.14 - 25.97 wt.%) and Fe_2O_3 (3.71 - 9.87 wt.%) and the concentrations of TiO_2, MnO, MgO, CaO, Na_2O, K_2O and P_2O_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 inweathering. A comparison between the two methods, we observed some elements obtained by ICP-MS shows muchlower results, such as Zr (25.6 - 283 ppm) and Y (11 - 148 ppm for XRF and 2.98 - 17.46 ppm for ICP-MS) whichare 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

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