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Distribution Pattern Identification of Mineral using XRF and XRD Method in Jeneberang Watershed, Indonesia

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Abstract: Research has been conducted using XRF (X-Ray Fluorescence) and XRD (X-Ray Diffraction) to determine the distribution pattern and Si and Fe content and the mineral composition rocks Jeneberang Watershed. This study's main objective was to determine the metal element content and mineral composition in rock samples along the Jeneberang watershed. The minerals come from Lompobattang and Sapaya Volcano Products. The results showed that five metal elements are dominated by Si and Fe and 15 minerals found in the study area. In addition, it showed a relatively high percentage of Si, Fe, Ca, K, Al, Albite, Feldspar, and Anorthite. The Si and Fe exist in every sampling location. However, their levels are low in two locations (Bissua and Kampili), approximately 4.52% of Si and 5.79% of Fe. On the other hand, their percentage is relatively high in the rest of the sampling locations (Mawang, Sungguminasa, Malengkeri, and Barombong). Similar to the previous elements, Ca exists in every single sampling location. While the low concentration of Ca was shown in Bissua, Mawang, Sungguminasa, Malengkeri, Barombong, its concentration is very high in Kampili. Furthermore, Al and K's low concentrations were found in Bissua, Mawang, Sungguminasa, Malengkeri, and Barombong but absent in Kampili. The rapid and environment-friendly method of the modal analysis of rocks here may help map volcanic eruption flow in the Jeneberang watershed.

Keywords: metal element content, mineral composition, rock, X-Ray fluorescence method, X-Ray diffraction method.

使用 X 射线荧光和 X 射线衍射法在印度尼西亚杰内伯朗流域进行矿物分布模式识别

摘要: 已经使用 X 射线荧光和 X 射线衍射进行了研究, 以确定分布模式、硅和福莱姆含量以及杰内伯朗流域岩石的矿物成分。本研究的主要目的是确定杰内伯朗流域岩石样品中的金属元素含量和矿物成分。矿物质来自跳跳台和哇火山产品。结果表明, 研究区发现的 5 种金属元素以硅、福莱姆为主, 矿物有 15 种。此外, 它显示出较高百分比的硅、福莱姆、钙、钾、铝、钠长石、长石和钙长石。硅和铁存在于每个采样位置。然而, 它们在两个位置 (比苏阿和坎皮利) 的含量较低, 大约为 4.52% 的硅和 5.79% 的福莱姆。另一方面, 在其他采样地点 (马旺、松古米纳萨、马伦克里和巴隆邦), 他们的百分比相对较高。与前面的元素类似, 钙存在于每个采样位置。虽然在比苏阿、马旺、圣古米娜萨、马伦克、巴龙邦的钙浓度较低, 但在坎皮利的浓度非常高。此外, 在比苏阿、马旺、圣古米娜萨、马伦克和巴龙邦发现了低浓度的铝和钾, 但在坎皮利中不存在。此处对岩石进行模态分析的快速且环保的方法可能有助于绘制杰内伯朗流域的火山喷发流图。

关键词: 金属元素含量、矿物成分、岩石、X 射线荧光法、X 射线衍射法。