

## SARI

Penelitian ini dilakukan di lereng barat daya Gunung Ijo, Pegunungan Kulon Progo. Secara administratif, lokasi penelitian berada di Kecamatan Bagelen, Kabupaten Purworejo, Jawa Tengah. Keterdapat mineral mafik berukuran besar (megakristal) di lokasi penelitian merupakan fenomena yang langka dan unik, sebab proses magmatisme di daerah tersebut secara umum berasosiasi dengan intrusi dangkal dan produk vulkanik yang menghasilkan mineral dengan ukuran halus. Tujuan dari penelitian ini untuk mengidentifikasi kondisi geologi, karakteristik mineralogi dan geokimia batuan, serta menginterpretasi petrogenesis megakristal mineral mafik di daerah penelitian. Metode yang dilakukan adalah pemetaan geologi, analisis petrografi, geokimia (ICP-AES dan ICP-MS), serta kimia mineral (*micro*-XRF). Terdapat dua satuan litologi, yakni satuan breksi vulkanik dan satuan intrusi andesit, serta endapan pasir lanauan. Kedua satuan litologi dan endapan ini merepresentasikan morfologi yang berbeda pula, yaitu satuan punggung aliran lahar, satuan perbukitan intrusi, dan satuan dataran aluvial. Megakristal mineral mafik dijumpai pada satuan breksi vulkanik. Karakteristik mineralogi batuan beku di lokasi penelitian tersusun oleh hornblenda, piroksen, plagioklas, mineral opak, dan gelas, sedangkan breksi vulkanik tersusun oleh fragmen megakristal mineral klinopiroksen dan hornblenda, serta fragmen andesit basaltik dan andesit. Analisis geokimia menunjukkan bahwa kelompok megakristal mineral mafik memiliki seri magma toleitik, sedangkan kelompok batuan beku memiliki seri kalk-alkalin. Petrogenesis megakristal mineral mafik terbentuk dari kristalisasi fraksinasi magma toleitik Gunung Ijo. Pengisian ulang magma kalk-alkalin menyebabkan ketidaksetimbangan di dalam dapur magma dan mendorong megakristal mineral mafik menuju ke bagian yang lebih atas dari dapur magma. Magma kalk-alkalin kemudian mengalami diferensiasi menghasilkan andesit basaltik dan andesit. Megakristal mineral mafik terbawa ke permukaan akibat erupsi eksplosif Gunung Ijo melalui mekanisme aliran piroklastik dan aliran lahar, bercampur dengan produk vulkanisme yang memiliki seri kalk-alkalin yaitu tuf lapili dan breksi vulkanik.

**Kata kunci:** megakristal mineral mafik, Gunung Ijo, petrogenesis.

## ABSTRACT

Administratively, this research was held in Bagelen Distric, Purworejo Regency, Central Java, which is specifically located in the southwestern part of Mount Ijo, Kulon Progo Mountains. The presence of giant mafic minerals (megacrysts) are a unique aspect because the magmatism processes in this area associated with shallow intrusion and volcanic products that produce fine grained minerals. This study aims to identify the geological conditions, mineralogy and geochemical characteristics. This research also interpret the petrogenesis of mafic mineral megacrysts in the study area. In conducting this study, detailed geological mapping, petrography analysis, geochemical analysis by using ICP-AES and ICP-MS, and mineral chemistry analysis by using micro-XRF are done for further observation. There are 3 types of rock units in the study area including volcanic breccia unit, andesite intrusion, and silty sand sediment which represent different morphologies. These morphologies are lahar flow ridges unit, intrusion hills unit, and alluvial plain unit. Mafic mineral megacrysts are found in volcanic breccia unit. The mineralogical characteristics of igneous rocks at the study area are composed of hornblende, pyroxene, plagioclase, opaque minerals, and glass, while volcanic breccias are composed of clinopyroxene megacryst, hornblende megacryst, andesite, and basaltic andesite. Geochemical analysis shows that mafic mineral megacrysts group have a tholeiitic magma series, while the igneous rocks group have a calc-alkaline magma series. Based on the analysis, it can be interpreted the presence of mafic mineral megacrysts are a result of the fractional crystallization process of the tholeiite magmas of Mount Ijo. The calc-alkaline magma recharge causes disequilibrium conditions by changing temperature or compositional requirements and generated mafic mineral megacrysts to ascent towards the upper part of the magma chamber. Subsequently, the calc-alkaline magma has begun to differentiate to produce basaltic andesite and andesite. Mafic mineral megacrysts ascent to the surface due to an explosive eruption of Mount Ijo through the mechanism of pyroclastic flow and lahar. Mafic mineral megacrysts have mixed with volcanism products that have a calc-alkaline series those are lapilli tuff and volcanic breccias.

**Keywords:** mafic mineral megacrysts, Mount Ijo, petrogenesis.