

SARI

Kompleks Melange Luk-Ulo merupakan daerah yang terbentuk oleh proses orogenik yang menyebabkan tersingkapnya filit grafit. Studi filit grafit menjadi menarik karena selain kehadiran mineral grafit yang memiliki potensi tinggi untuk industri manufaktur, keterdapatan struktur foliasi filitik juga dapat mengintrepetasikan sejarah deformasi dan proses metamorfisme suatu area. Tujuan penelitian ini adalah mengetahui karakteristik petrologi dan orientasi gaya tektonik relatif yang bekerja pada pembentukan filit grafit di Sungai Luk-Ulo, Karangsembung, Kebumen dan Sungai Putih, Bawang, Banjarnegara, Jawa Tengah. Penelitian dilakukan dengan metode observasi lapangan, *oriented sampling*, analisis petrografi, analisis mikrostruktur, dan analisis *microfracture*. Karakteristik petrografi filit grafit memiliki warna abu-abu kehitaman, struktur foliasi filitik, tekstur lepidoblastik, tekstur khusus *microfolding*, *microfault*, kataklastik, krenulasi, milonit, augen dan porfiroklastik. Filit grafit tersusun atas mineral utama grafit, kuarsa, muskovit, dan klorit dan terdapat mineral aksesoris yakni mineral opak dan kalsit. Grafit pada filit grafit di lokasi penelitian berdasarkan proses pembentukannya bertipe grafit singenetik yang berasosiasi dengan batuan metamorf lain yakni filit klorit, marmer, dan kuarsit. Keterdapatan tekstur milonit, augen dan kataklastik dapat dikorelasikan dengan indikasi kehadiran patahan. Gaya tektonik yang membentuk deformasi filit grafit di lokasi penelitian menunjukkan 3 fase deformasi yang berbeda yang memiliki orientasi kompresi NW-SE (D1), NE-SW (D2), dan E-W (D3). Fase-fase deformasi tersebut menghasilkan foliasi filit grafit S1 berorientasi timurlaut-baratdaya (NE-SW), S2 berorientasi tenggara-baratlaut (NW-SE), dan S3 berorientasi utara-selatan (N-S), dimana hubungan dari ketiga jenis foliasi ini ditunjukkan dengan adanya tekstur krenulasi. Foliasi filit grafit secara umum memiliki trend orientasi timurlaut-baratdaya (NE-SW) di Sungai Luk-Ulo dan tenggara-baratlaut (NW-SE) di Sungai Putih. Perbedaan orientasi foliasi ini dipengaruhi oleh adanya indikasi *simple shear* interaksi dua sesar dekstral di Sungai Putih yang membuat orientasi foliasi mengalami rotasi dan dapat juga dipengaruhi oleh deformasi yang membentuk lipatan.

Kata kunci: filit grafit, grafit, deformasi, mikrostruktur, Kompleks Melange Luk-Ulo

ABSTRACT

The Luk-Ulo Melange Complex is an area formed by orogenic processes that caused exposure of graphite phyllites. The study of graphite phyllites are interesting because, in addition to the presence of graphite minerals that have high potential for the manufacturing industry, the presence of phyllitic foliation structure can also reveal the deformation history and metamorphism process of an area. This study aims to determine the petrographic characteristics and orientation of the relative tectonic forces acting on the occurrence of graphite phyllites in Luk-Ulo River, Karangsembung, Kebumen, and Putih River, Bawang, Banjarnegara, Central Java. This study was conducted using field observation, oriented sample, petrographic analysis, microstructure analysis, and microfracture analysis. The petrographic characteristics of graphite phyllite have blackish-gray color, phyllitic foliation structure, lepidoblastic texture, special texture of microfolding, microfault, cataclastic, crenulation, mylonite, augen, and porphyroclastic. Graphite phyllite is composed of the main minerals graphite, quartz, muscovite, and chlorite and there are accessory minerals, namely opaque minerals and calcite. Graphite in graphite phyllite at the research site based on the formation process is a syngenetic graphite type associated with other metamorphic rocks, such as chlorite phyllite, marble and quartzite. The presence of mylonite, augen and cataclastic textures can be correlated with indications of fault existence. The tectonic forces that formed the deformation of graphite phyllite at the area of study show 3 different deformation phases with compression orientations of NW-SE (D1), NE-SW (D2), and E-W (D3). These deformation phases have resulted graphite phyllite foliation S1 oriented northeast-southwest (NE-SW), S2 oriented southeast-northwest (NW-SE), and S3 oriented north-south (N-S), where the relationship of these three types of foliation is indicated by the presence of crenulation texture. Graphite phyllite foliation generally has an orientation trend of northeast-southwest (NE-SW) in Luk-Ulo River and southeast-northwest (NW-SE) in Putih River. The difference in foliation orientation is affected by indication of simple shear interaction of two dextral faults in the Putih River that makes the foliation orientation rotate and can also be controlled by deformation that forms folds.

Keywords: graphite phyllite, graphite, deformation, microstructure, Luk-Ulo Melange Complex