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Eksplorium is Buletin Pusat Pengembangan Bahan Galian Nuklir as information media which contains the results of studies, research, and development of nuclear geology with the scope of geology, exploration, mining, processing of nuclear minerals, and environmental safety as well as the development of nuclear technology for people's welfare **Eksplorium** published 2 (two) times a year, in May and November.

Photo caption: Dago Scoria Cone showing scoria beds (Contributor: Tyto Baskara Adimedha)

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MANUSCRIPT WRITING GUIDELINES

The articles published in this journal are the results of studies, research, and development of nuclear geology with the scope of geology, exploration, mining, processing of nuclear minerals, and environmental safety as well as the development of nuclear technology for people's welfare. The articles are original work and have never been published.

Article formats:

1. TITLE, capitalized in the beginning of each word with font size of 12 in the center position.
2. AUTHOR NAME, written 2 space below the title with font size of 10
3. AFFILIATION ADDRESS AND CORRESPONDING E-MAIL ADDRESS, written a space below the author name with font size of 10
4. ABSTRACT, written in English with a maximum of 200 words containing a summary of: problems, objectives, methods, results, and conclusions, also equipped with 3-5 keywords .
5. INTRODUCTION, contains the background, scope, and objectives of the research.
6. THEORY, if necessary.
7. A. METHODOLOGY for research scientific work;
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9. CONCLUSION, contains conclusions from research results and suggestions.
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    [1] A. El Taher, "Elemental Analysis of Granite by Instrumental Neutron Activation Analysis (INAA) and X-Ray Fluorescence Analysis (XRF)", *Appl.Radiat.Iso*t, vol.70, p.350-354, 2012.
    [2] F. Ferrari, T. Apuani, and G.P. Giani, "Rock Mass Rating Spatial Estimation by Geostatistical Analysis", *Int. J. Rock Mec. Min. Sci,* vol. 70, p. 162-176, 2014.
    [3] L. Blevin, "Metallogeny of Granitic Rocks", *The Ishihara Symposium: Granites and Associated Metallogenesis*, Geoscience Australia, p. 1-4, 2004.
    [4] H. Syaeful, Suharji, and A. Sumaryanto, "Pemodelan Geologi dan Estimasi Kalan, Kalimantan Barat", *Prosiding Seminar Nasional Teknologi Energi Nuklir*, Pontianak, 2014.

The bibliography contains at least 10 references for research scientific work and a minimum of 25 references for review scientific work, published in the last 10 years and at least 80% comes from primary references (journals and theses).

The articles are written in English on A4 paper with a maximum number of 15 pages including pictures and tables. The complete templates and writing instructions can be downloaded on the explorium page (http://jurnal.batan.go.id/index.php/eksploration). The articles are submitted to the Editor in soft copy format on the Open Journal System/OJS of Eksplorium page no later than two months before the scheduled publication. Complete information can be read on the explorium page.

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FOREWORD

Dear Readers,

This edition of **Eksplorium** contains five (5) papers. The first paper is titled "Volcanic Ash Fall Hazard of Mount Merapi on Yogyakarta Nuclear Area." The second paper is titled "Geology and Alteration of East Pinolosian Area, Bolaang Mongondow, North Sulawesi Province." The third paper is titled "Petrogenesis and Geological Structure of Tantan Granitoid in Sungai Manau District, Merangin Regency, Jambi Province." The fourth paper is titled "Geological Structure Control on the Formation of Metal Mineralization at Quartz Veins in Jendi Village, Wonogiri Regency, Central Java." The fifth paper is titled "Activation of Kaolin Minerals from Ketapang Regency as Cu Metal Adsorbent Material."

We believe that **Eksplorium** can benefit readers, especially in developing insights into nuclear mineral technology, including geology, mining, processing, and the environment.

Editor in Chief

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Volcanic Ash Fall Hazard of Mount Merapi on Yogyakarta Nuclear Area

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ABSTRACT

The existence of nuclear installations in the Yogyakarta Nuclear Area is vulnerable to the eruption of Mount Merapi, the most active volcano in Indonesia. Tephra hazard has the potential to threaten the operational activities of nuclear installations in the Yogyakarta Nuclear Area; thus, it is necessary to analyze the distribution and potential hazard of volcanic ash from Mount Merapi for future eruptions. Numerical modelling is used in analyzing tephra distribution using TEPHRA2 software with parameters of the 2010 Mount Merapi eruption, which is then visualized to isomass and isopach maps of tephra distribution. The analysis resulted in the ash dispersion leading to the Yogyakarta Nuclear Area in April, May, June, and August with an accumulated mass of 20-50 kg/m^3 with a thickness of 0.2-12 cm. It is necessary to deal with volcanic ash hazards such as roof strength, secondary cooling system, filtering system, and electrical system for several installations in the Yogyakarta Nuclear Area.

Keywords: Merapi, tephra hazard, nuclear area.

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Geology and Alteration of East Pinolosian Area, Bolaang Mongondow, North Sulawesi Province

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ABSTRACT

Bolaang Mongondow is located on the Eastern North arm of Sulawesi. This area is a Neogene-aged magmatic arc composed of plutonic and volcanic rocks that indicate mineralization-bearing host rocks. The study aimed to determine the geological setting and alteration based on geological observations and geochemical analysis. The method used is geological mapping, followed by laboratory and studio data analysis. The lithology of this area is composed of andesite, diorite, and pyroclastic breccia units. Two main faults are the Northwest-Southeast trending dextral fault and the Northeast-Southwest trending sinistral fault, which causes hydrothermal mineral alteration. Mineral alteration in the study area is divided into several zones, including the Silicification Zone (massive silica + vuggy silica), Advance Argillic Zone (illite + alunite + dickite + halloysite + kaolinite), Argillic Zone (illite + montmorillonite + pyrophyllite), Prophyllitic Zone (chlorite + montmorillonite). The presence of mineral assemblages and alteration zones shows the characteristics of High Sulfide Epithermal deposits with the highest level of 0.47/ppm in the Advance Argillic Zone.

Keywords: Bolaang Mongondow, geology, alteration, geochemical, epithermal high sulfidation

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Petrogenesis and Geological Structure of Tantan Granitoid in Sungai Manau District, Merangin Regency, Jambi Province

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ABSTRACT

Tantan granitoids are Late Triassic–Early Jurassic age intrusive rocks that are quite extensive and can be partially found in Sungai Manau Sub-district, Merangin Regency, Jambi Province. Tantan granitoids are found in the Barisan Hills physiography, a magmatic arc line on Sumatra Island. Tantan granitoids are interesting to observe to explain rock formation. The petrographic and XRF analyses can provide insight into the intrusive rock type, its relationship to the tectonic framework, and magmatism. The trend of potential mineral resources can be interpreted based on the granitoid-type approach. The Tantan Granitoid Intrusion has two types of rocks: granite and quartz monzodiorite. Granite and quartz monzodiorite are sub-alkaline magma types, with the granitoid type being I-type metaluminous, which tends to have potential with base metal minerals associated with hornblende minerals from observations or petrographic analysis. Based on the TAS diagram of Na_2O+K_2O vs. SiO_2 shows that the sub-alkaline magma type is a calc-alkaline series type in the K_2O vs. SiO_2 diagram and a calc-alkaline type in the AFM diagram. This data analysis shows that the tectonic formation of the Tantan Granitoid magma was formed from orogenic results in the form of a Continental Arc. This type can be associated with Meso-Thetic subduction activities against the West Sumatra Sundablock during the Late Triassic–Early Jurassic. Structures in the study area include northwest-southeast trending horizontal faults, including Batang Tantan Fault, Tiangko Fault, Sei Tengko Fault, and Serik Fault, then northeast–southwest trending regional faults, and relatively downward trending faults, namely Serik Fault and Betung Fault. The formation of fault structures is believed to result from subduction tectonic processes during this period.

Keywords: Tantan Granitoid, continental arc, petrogenesis, structural geology

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Geological Structure Control on the Formation of Metal Mineralization at Quartz Veins in Jendi Village, Wonogiri Regency, Central Java

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ABSTRACT

Quartz veins in the Jendi area and its surroundings are formed by geological structures with distributions and patterns that need to be known. This study uses data on striation, quartz vein orientation, and metal content in quartz veins. The use of this data aims to determine the relationship between the vein direction pattern and its metal mineral content with the main structure that forms it. The results of this study can be useful in determining the structural model and distribution of veins in the study area. The research method was carried out through a series of field and laboratory work. Fieldwork includes measuring striation data, measuring the orientation of quartz veins, and taking quartz vein samples. Studio work includes stereographic analysis of striation data, rosette diagram analysis of vein measurement data, and analysis of metallic element content of quartz veins. The quartz vein mineralization zone in the study area is controlled by a right slip fault with a northwest-southeast trend that forms a transtension zone with a north-south trend. The north-south trending veins are generally thick, long/continuous, and have a high metal content.

Keywords: veins, streaks, metal, faults, mineralization

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Activation of Kaolin Minerals from Ketapang Regency as Cu Metal Adsorbent Material

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ABSTRACT

Kaolin is a term given to a group of phyllosilicate minerals whose layers have a 1:1 structure with $Al_2Si_2O_5(OH)_4$ composition. This type of kaolin phyllosilicate mineral is commonly known as a clay mineral. The kaolin clay group consists mainly of the kaolinite mineral or better known as white clay. Kaolin is widely applied in industries such as paper, ceramics, rubber, plastic, paint, fiberglass, cosmetics, etc. The processing of kaolin as an adsorbent can be carried out using physical activation, where the kaolin is washed and separated from the impurities and dried into a powder. Then the chemical activation of kaolin will go through a leaching process using HCl with optimal concentrations aimed at separating kaolin from impurities that are still chemically bound to kaolin. The results of the characteristics show recovery of 71.42% to 81.2% and moisture content <2%. The chemical composition of kaolin containing SiO_2 was 53.32–67.32%, Al_2O_3 was 28.22–30.47%, Fe_2O_3 was 1.32%, CaO was 0.03%, MgO was 0.20%, MnO_2 was 0.01%, K_2O of 0.86%, NaO of 0.01%, Cr of 0.01%, LOI of 11.03%. The adsorption test results on Cu metal in $CuSO_4$ solution showed the absorption of 62–93% of Cu metal which was adsorption.

Keywords: kaolin, physical activation, chemical activation, adsorbent, metal adsorption.