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GEOLOGI, ALTERASI DAN MINERALISASI EPITERMAL SULFIDASI TINGGI PROSPEK GUNUNG  
KUMBOKARNO, DESA

KARANGGANDU, KECAMATAN WATULIMO, KABUPATEN TRENGGALEK

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## DAFTAR PUSTAKA

- Anderson, J.A., 1982, “Characteristics of Leached Capping and Techniques of Appraisal”, *Advances in the Geology of Porphyry Copper Deposits, Southwestern North America*, ed S.R. Titley, Tucson: University of Arizona Press.
- Aneka Tambang, 2017, *East Java Regional Mapping Program*, tidak dipublikasi.
- Arc Exploration, 2018, *Update on Trenggalek Project, Indonesia. Drilling Results from Jerambah Prospect*, Asx Announcement.
- Arribas Jr., A., 1995, “Characteristics of High-Sulfidation Epithermal Deposits and Their Relation to Magmatic Fluid”, *Magmas, Fluids, and Ore Deposits*, 23: 419 – 454.
- Bakker, R.J., 2003, “Package FLUIDS 1. Computer Programs for Analysis of Fluid Inclusion Data and for Modelling Bulk Fluid Properties”, *Chemical Geology*, 194: 3 – 23.
- Bard, J.P., 1986, *Microtextures of Igneous and Metamorphic Rocks*, Dordrecht: Reidel Publishing Company.
- Berger, B.R., Ayuso, R.A., Wynn, J.C., Seal, R.R., 2008, *Preliminary Model of Porphyry Copper Deposits*, Reston: U.S. Geological Survey.



Bodnar, R.J., 1983, “A Method of Calculation Fluid Inclusion Volumes Based on

Vapor Bubble Diameters and P-V-T-X Properties of Inclusion Fluids”,

*Economic Geology*, 78: 535 – 542.

Bodnar, R.J., 1993, “Revised Equation and Table for Determining the Freezing

Point Depression of H<sub>2</sub>O – NaCl Solutions”, *Geochimica et Cosmochimica*

*Acta*, 57: 683 – 684.

Bodnar, R.J., Vityk, M.O., 1994, “Interpretation of Microthermometric Data for

H<sub>2</sub>O – NaCl Fluid Inclusions”, *Fluid Inclusions in Minerals: Methods and*

*Applications*, ed. B. de Vivo, M.L. Frezzotti, Short Course IMA, hal. 117 –

130.

Bandono, B.B., 2006, “Klasifikasi Bentuk Muka Bumi (*Landform*) untuk Pemetaan

Geomorfologi pada Skala 1:25.000 dan Aplikasinya untuk Penataan Ruang”,

*Geoaplika*, 1 (2): 71 – 78.

Carlile, J.C., Mitchell, A.H.G., 1994, “Magmatic Arcs and Associated Gold and

Copper Mineralization in Indonesia”, *Jounral of Geochemical Exploration*, 50:

91 – 142.

Chen, Y.P., 1977, *Table of Key Lines in X-ray Powder Diffraction Patterns of*

*Minerals in Clays and Associated Rocks*, Bloomington: Department of Natural

Resources, Geological Survey Occasional, Paper 21.

Corbett, G.J., Leach, T.M., 1998, “Southwest Pacific Rim Gold-Copper Systems:

Structure, Alteration, and Mineralization”, *Economic Geology*. Special

Publication Vol. 6, hal. 100 – 125.



- Deyell, C.L., Leonardson, R., Rye, R.O., Thompson, J.F.H., Bissig, T., Cooke, D.R., 2005, "Alunite in the Pascua-Lama High-Sulfidation Deposit: Constraints on Alteration and Ore Deposition Using Stable Isotope Geochemistry", *Economic Geology*, 100: 131 – 148.
- Dill, H.G., 2001, "The Geology of Aluminium Phosphates and Sulphates of the Alunite Group Minerals: A Review", *Earth-Science Reviews*, 53: 35 – 93.
- Dong, G., Morrison, G., Jaireth, S., "Quartz textures in epithermal veins, Queensland; classification, origin and implication", *Economic Geology*, 90 (6): 1841–1856.
- Einaudi M.T., Hedenquist J.W., Inan E., 2003, "Sulfidation state of fluids in active and extinct hydrothermal systems: transition from porphyry to epithermal environments". *Society of Economic Geology*, 10: 285-313.
- Haas, Jr., J.L., 1971, "Thermodynamic Properties of the Coexisting Phases and Thermochemical Properties of the NaCl Component in Boiling NaCl Solutions", *Geological Survey Bulletin*. 1421 -B.
- Hall, D.L., Sterner, S.M., Bondar, R.J., 1988, "Freezing Point Depression of NaCl-KCl-H<sub>2</sub>O Solutions", *Economic Geology*, 83: 197 – 202.
- Hall, R., 2012. "Late Jurassic – Cenozoic Reconstructions of the Indonesian Region and the Indian Ocean", *Tectonophysics*, 570-571: 1 – 41.
- Hedenquist, J.W., 2000, "Exploration for Epithermal Gold Deposits", *SEG Reviews*, 15: 245 – 277.



Hedenquist, J.W., 2017, *Transitions from Porphyry to Epithermal Ore Environments*, UNR, Ralph J. Roberts lecture.

Hedenquist, J.W., Arribas, A., 2019, *Environments of Advanced Argillic Alteration I. Mineral Stability and Hypogene Formation II. Steam-heated, Supergene, and Exploration Implications*, Tokyo: Society of Resource Geology.

Hedenquist, J.W., Taran, Y.A., 2013, “Modelling the Formation of Advanced Argillic Lithocaps: Volcanic Vapor Condensation Above Porphyry Intrusions”, *Economic Geology*, 108 (7): 1523 – 1540.

Hemley, J.J., Hostetler, P.B., Gude, A.J., Mountjoy, W.T., 1969, “Some Stability Relations of Alunite”, *Bulletin of the Society of Economic Geologists*, 64 (6): 599 – 612.

Hemley, J.J., Montoya, J.W., Marinenko, J.W., Luce, R.W., 1980, “Equilibria in the System  $\text{Al}_2\text{O}_3\text{-SiO}_2\text{-H}_2\text{O}$  and Some General Implications for Alteration/Mineralization Processes”, *Economic Geology*, 75: 210 – 228.

Hollister, V.F., 1978, *Geology of the Porphyry Copper Deposits of the Western Hemisphere*, New York: Society of Mining Engineers of the American Institute of Mining, Metallurgical, and Petroleum Engineers.

Hurai, V., Huraiova, M., Slobdonik, M., Thomas, R., 2015, *Geofluids: Developments in Microthermometry, Spectroscopy, Thermodynamics, and Stable Isotopes*, Amsterdam: Elsevier.



Husein, S., Nukman, M., 2015, "Rekonstruksi Tektonik Mikrokontinen Pegunungan Selatan Jawa Timur: Sebuah Hipotesis Berdasarkan Analisis Kemagnetan Purba", *Prosiding Seminar Nasional Kebumian Ke-8*, Yogyakarta: Jurusan Teknik Geologi Fakultas Teknik Universitas Gadjah Mada.

Idrus, A., Rahmalia, T., Kustrianugroho, K., Fadlin, F., Maula, S., 2017, "Geology and Ore Mineralization of the New Discovered Tasikmadu Porphyry Copper-Gold Prospect in Watulimo Sub-District, Southern Trenggalek, Java Island, Indonesia: A Preliminary Study", *Geosciences*, 7: x.

Le Bas, M.J., Streckeisen, A.L., 1991, "The IUGS Systematics of Igneous Rocks", *Journal of the Geological Society, London*, 148: 825 – 833.

Kustrianugroho, K., Idrus, A., 2017, Geologi, alterasi hidrotermal, dan mineraliasi porfiri tembaga-emas di daerah Desa Tasikmadu, Kecamatan Watulimo, Kabupaten Trenggalek, Provinsi Jawa Timur, [skripsi tidak dipublikasikan].

Lowell, J.D., Guilbert, J.M., 1970, "Lateral and Vertical Alteration-Mineralization Zoning in Porphyry Ore Deposits", *Economic Geology*, 65 (4): 373 – 408.

Mackenzie, W.S., Donaldson, C.H., Guilford, C., 1982, *Atlas of Igneous Rocks and Their Textures*, Essex: Longman Group UK Limited.

Marcoux, E., Milesi, J.-P., 1994, "Epithermal Gold Deposits in West Java, Indonesia: Geology, Age, and Crustal Source", *Journal of Geochemical Exploration*, 50: 393 – 408.



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Maryono, A., Harrison, R.L., Cooke, D.R., Rompo, I., Hoschke, T.G., 2018,

“Tectonics and Geology of Porphyry Cu-Au Deposits Along the Eastern Sunda

Magmatic Arc, Indonesia”, *Society of Economic Geologists*, 113: 7 – 38.

Metcalfe, I., 2006, “Palaeozoic and Mesozoic Tectonic Evolution and Palaeogeography of East Asian Crustal Fragments: The Korean Peninsula in Context”, *Gondwana Research*. 9: 24-26.

Metcalfe, I., 2011, “Tectonic Framework and Phanerozoic Evolution of Sundaland”, *Gondwana Research*. 19: 3 – 21.

Moore, D.M., Reynolds Jr., R.C., 1989, *X-Ray Diffraction and the Identification and Analysis of Clay Minerals*, Oxford: Oxford University Press.

Ohmoto, H., Goldhaber, M.B., 1997, “Sulfur and Carbon Isotopes”, dalam *Geochemistry of Hydrothermal Ore Deposits*, edisi ke-3, ed. H.L. Barnes, New York: Wiley, hal. 517 – 611.

Pirajno, F., 2009, *Hydrothermal Processes and Mineral Systems*, East Perth: Springer.

Pracejus, B., 2008, *The Ore Minerals Under the Microscope: An Optical Guide*, Amsterdam: Elsevier.

Reyes, A.G., 1991, “Mineralogy, Distribution, and Origin of Acid Alteration in Philippine Geothermal Systems”, *Geological Survey of Japan Reports*, 277: 59 – 66.



Reed, M.H., 1997, "Hydrothermal Alteration and Its Relationship to Ore Fluid

Composition", *Geochemistry of Hydrothermal Ore Deposits*, ed. H.L. Barnes,

New York: John Wiley & Sons, Inc, hal. 303 – 365.

Richards, J.P., 2011, "Magmatic to Hydrothermal Metal Fluxes in Convergent and

Collided Margins", *Ore Geology Review*, 40 (1): 1 – 26.

Ritter, D.F., Kochel, R.C., Miller, J.R., 2002, *Process Geomorphology*, Boston:

McGraw-Hill.

Roedder, E., Bodnar, R.J., 1980, "Geological Pressure Determinations from Fluid

Inclusion Studies", *Annual Review of Earth and Planetary Sciences*, 8: 263 –

301.

Rollinson, H.R., 1993, *Using Geochemical Data: Evaluation, Presentation,*

*Interpretation*, Essex: Longman Group UK Limited.

Rye, R.O., 2005, "A Review of the Stable-Isotope Geochemistry of Sulfate

Minerals in Selected Igneous Environments and Related Hydrothermal

Systems", *Chemical Geology*, 215: 5 – 36.

Rye, R.O., Bethke, P.M., Wasserman, M.D., 1992, "The Stable Isotope

Geochemistry of Acid Sulfate Alteration", *Economic Geology*, 87: 225 – 262.

Rye, R.O., Breit, G., Zimbelman, D.R., 2003, "Preliminary Mineralogical and

Stable Isotope Studies of Altered Summit and Flank Rocks and Osceola

Mudflow Deposits on Mount Rainier, Washington, US., *Geological Survey*

*Open File*, hal. 3 – 646.



Samodra, H., Suharsono, Gafoer, S., Suwarti, T., 1992, *Peta Geologi Lembar Tulungagung Skala 1:100.000*, Bandung: Pusat Penelitian dan Pengembangan Geologi.

Schwertmann, U., 1971, “Transformation of Hematite to Goethite in Soils”, *Nature*, 232: 624 – 625.

Schwertmann, U., Murad, E., 1983, “Effect of pH on the Formation of Goethite and Hematite from Ferrihydrite”, *Clays and Clay Minerals*, 31 (4): 277 – 284.

Setijadji, L.D., Kajino, S., Imai, A., Watanabe, K., 2006, “Cenozoic Island Arc Magmatism in Java Island (Sunda Arc, Indonesia): Clues on Relationships between Geodynamics of Volcanic Centers and Ore Mineralization”, *Resources Geology*, 56(3): 267 – 292.

Shepherd, T.J., Rankin, A.H., Alderton, D.H.M., 1985. *A Practical Guide to Fluid Inclusion Studies*, Glasgow: Blackie and Sons.

Sillitoe, R.H., 1997, “Characteristics and Controls on the Largest Porphyry Copper-Gold and Epithermal Gold Deposits in the Circum-Pacific Region”, *Australian Journal of Earth Sciences*, 44: 373 – 388.

Sillitoe, R.H., 2010, “Porphyry Copper System”, *Economic Geology*, 105 (1): 3 – 41.

Smyth, H.R., Hall, R., Nichols, G.J., 2008a, “Cenozoic Volcanic Arc History of East Java, Indonesia: The Stratigraphic Record of Eruptions on an Active Continental Margin”, *The Geological Society of America. Special Paper* 436.



Smyth, H.R., Hall, R., Nichols, G.J., 2008b, "Significant Volcanic Contribution to Some Quartz'Rich Sandstones, East Java, Indonesia", *Journal of Sedimentary*

*Research*, 78: 335 – 356.

Sternier, S.M., Hall. D.L., Bodnar, R.J., 1988, "Synthetic Fluid Inclusions V.

Solubility Relations in the System NaCl – KCl – H<sub>2</sub>O under Vapour-Saturated Conditions", *Geochimica et Cosmochimica Acta*, 52: 989 – 1005.

Steven, T.A., Ratte, J.C., 1960, "Geology and Ore Deposits of the Summitville

District, San Juan Mountains, Colorado", *U.S. Geological Survey Professional Paper*, No. 343.

Stofferegen, R.E., 1987, "Genesis of Acid-Sulfate Alteration and Au-Cu-Ag

Mineralization at Summitville, Colorado", *Economic Geology*, 82: 1575 – 1591.

Sutopo, B., 2013, *The Martabe Au-Ag High-Sulfidation Epithermal Deposits, Sumatra, Indonesia: Implications for Ore Genesis and Exploration*, Tesis

untuk Ph.D., University of Tasmania.

Takahashi, R., Kaneko, G., 2019, *Correction Graph for Fluid Inclusion Data*, tidak

dipublikasi.

Takahashi, R., Shingo, Y., Imai, A., Watanabe, K., Harijoko, A., Warmada, I. W.,

Idrus, A., Setijadji, L.D., Phoumephone, P., Schersten, A., Page, L., 2014,

"Epithermal Gold Mineralization in the Trenggalek District, East Java,

Indonesia", *Resource Geology*, 64 (2): 149 – 166.



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Universitas Gadjah Mada, 2019 | Diunduh dari <http://etd.repository.ugm.ac.id/>

Taylor, R., 1992, *Ore Textures: Recognition and Interpretation*, Townsville: James

Cook University of North Queensland.

Taylor, R., *Gossans and Leached Cappings Filed Assessment*, Berlin: Springer.

Thompson, A.J.B., Thompson, J.F.H., 1996, *Atlas of Alteration: A Field and*

*Petrographic Guide to Hydrothermal Alteration Minerals*, Newfoundland:

Mineral Deposits Division, Geological Association of Canada.

Urusova, M.A., 1975. "Volumetric Properties of Natrium Chloride Aqueous

Solutions at Increased Temperatures and Pressures", *Russian Journal of*

*Inorganic Chemistry*, 22: 3103–3110.

Van Bemmelen, R.W., 1949, *The Geology of Indonesia Vol. 1A: General Geology*

*of Indonesia and Adjacent Archipelagoes*, The Hague: Government Printing

Office.

Van Leeuwen, T.M., 1994, "25 Years of Mineral Exploration and Discovery in

Indonesia", *Journal of Geochemical Exploration*, 50: 13 – 90.

Watanabe, S., Hayashi, K., 2014, "Mineralogy, Sulfur Isotope, and Fluid Inclusion

Studies of Hydrothermal Ore at the Hakurei Deposit, Bayonnaise Knoll, Izu-

Bonin Arc", *Resource Geology*, 64 (2): 77 – 90.

White, N.C., 1991, "High Sulfidation Epithermal Gold Deposits: Characteristics

and a Model for Their Origin", *High-Temperature Acid Fluids and Associated*

*Alteration and Mineralization, Geological Survey of Japan Report No. 277 ed.*

Y. Matsuhisa, M. Aoki, J.W., Hedenquist, hal. 9 -20.



White, N.C., Hedenquist, J.W., 1995, "Epithermal Gold Deposits: Styles, Characteristics, and Exploration", *SEG Newsletter*, 23: 1, 9 – 13.

Whitney, D.L., Evans, B.W., 2010, "Abbreviations for Names of Rock-forming Minerals", *American Mineralogist*, 95 (1): 185 – 187.

Wilkinson, J.J., 2001, "Fluid Inclusions in Hydrothermal Ore Deposits", *Lithos*, 55: 229 – 272.

Williams-Jones, A.E., Heinrich, C.A., 2005, "Vapor Transport of Metals and the Formation of Magmatic-Hydrothermal Ore Deposits", *Economic Geology*, 100: 1287 – 1312.