

## DAFTAR PUSTAKA

- Ainul, F.S. 2020. Penentuan Tipe Alterasi Berdasarkan Analisis Petrografi, Mineragrafi, Dan Geokimia Pada Daerah Kasimbar, Kabupaten Parigi Moutong, Provinsi Sulawesi Tengah. Program Studi Teknik Geologi Universitas Diponegoro, Semarang .Tim Eksplorasi PT Erde Ressourcen
- Bateman, A.M., and Jensen M.L.. 1981. Economic Mineral Deposits. John Wiley and Sons : Australia.
- Brobst, Donald A. and Pratt, Walden P. 1973. United States Mineral Resources. Washington: United States Government Printing Office.
- Brouwer, HA., 1934, Geologische onderzoeken op het eiland Celebes, *Verh. Geol. Mynb. Gen. Ned. en Kol.*, Geola Serie Vol. x.
- Calvert, S.J., 1999, The Cenozoic Evolution of the Lariang and Karama Basins, Sulawesi, Proceedings 27th Annual Convention and Exhibition, Indonesian Petroleum Association, Jakarta.
- Corbett, G.J., and Leach, T.M.. 1998. *Southwest Pacific gold-copper systems: Structure, alteration and mineralization*. Society of Economic Geologists Special Publication 6, 238 p.
- Chandramali, E. A. & Wijesekera, N. T., 2012. Field Data Collection for Land Information Systems – A Case Study on Quantification of Resource Requirement for a GIS. *Journal of the Institution of Engineers*, 45(4), pp. 51-64.
- Craig, J. R., & Vaughan, D. J. 1994. Ore Microscopy and Ore Petrography. New York: John Wiley & Sons, Inc.
- Cohen, A. S., Galaty, M. L. & Fisher, C. T., 2018. Petrographic Analysis of Ceramics and Clay from Angamuco, Michoacán. *Journal of Archaeological Science: Reports*, Volume 19, p. 155–165.
- Einaudi, M.T., Meinert, L.D., Newberry, R.J. 1981. Skarn deposits. Economic geology. Vol 77: 745-754.
- Evans, A.M. 1993. *Ore Geology and Industrial Minerals, An Introduction (3rd edition)*. Blackwell Science: USA.
- Evans, A.M. 1987. *An Introduction to Ore Geology*. Blackwell Scientific publications.
- Graha, D.S. 1987. *Batuan dan Mineral*. Nova, Bandung.
- Gross, G.A., Gower, C.F., and Lefebure, D.V., 1998. Magmatic Ti-Fe V oxide deposits. British Columbia Ministry of Employment and Investment, 1, 24J-1 - 24J-3.

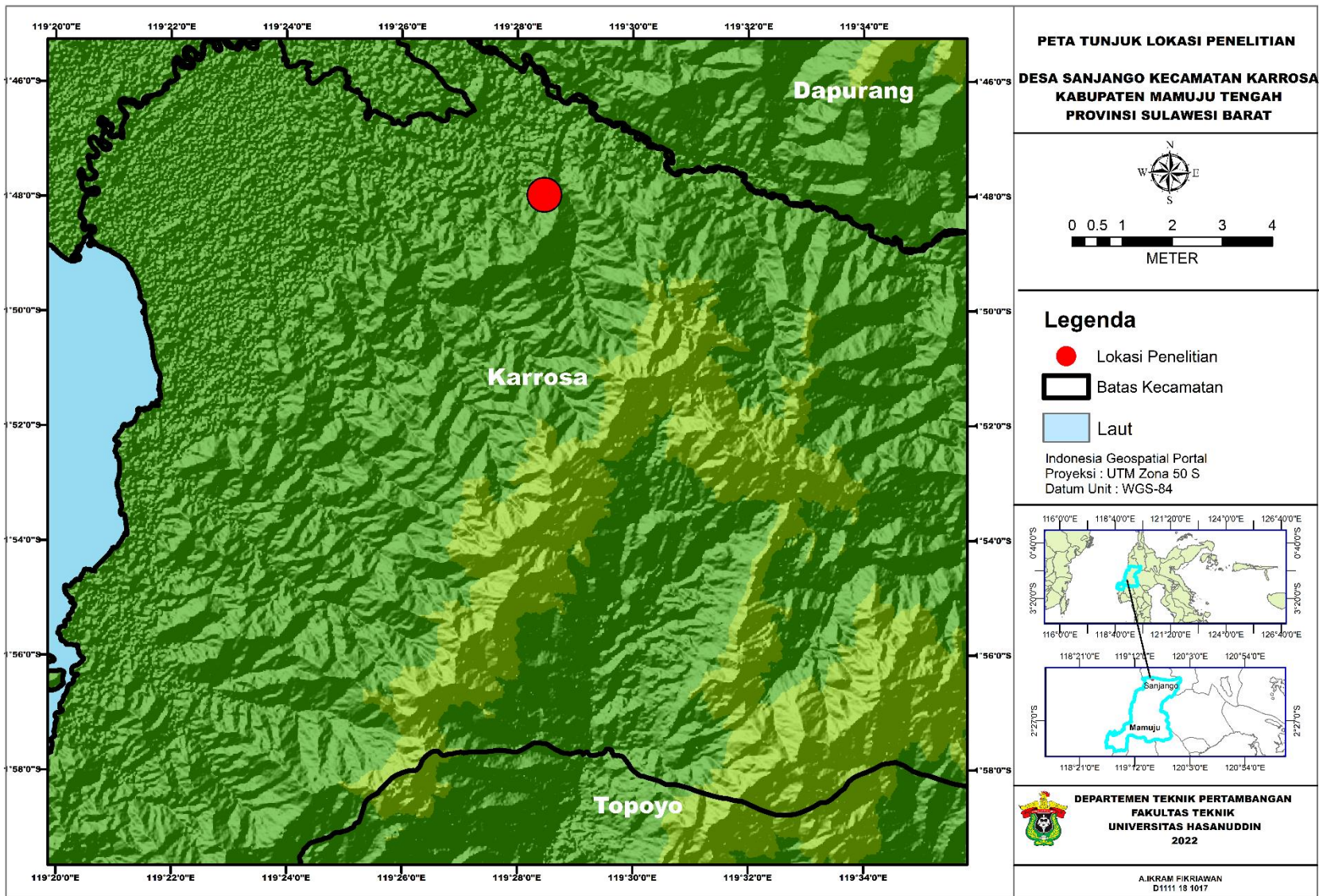
- Guilbert, J. M. and Park, C. F. 1986. *The Geology of Ore Deposits*. Pergamon Press, Oxford.
- Grundmann, G. & Scholz, H., 2015. *The preparation of thin sections, polished sections, acetate foil prints, preparation for elutriation analysis, and staining tests for the optical and electron microscopy*. München: Engineering Geology Technische Universität München
- Haldar, S.K. 2018. *Mineral Exploration (Second Edition)*, Elsevier, Pages 47-68,
- Harwan, 2018, "Characteristics Alteration and Mineralization Of Iron Ore at Pakke Area, Bontocani Subdistrict Bone Regency South Sulawesi", Universitas Hasanuddin, Makassar
- Holmes, R., 2016. Sampling procedures. In: *Advances in Gold Ore Processing*. Amsterdam, The Netherlands: Elsevier, p. 45–56.
- Idral, A., 2008, *Aplikasi Metoda Geomagnetik Dalam Menentukan Potensi Sumber Daya Biji Besi di Daerah Bukit Bakar dan Ulu Rabau, Kecamatan Lembah Gumanti Kab. Solok, Sumatra Barat*, Buletin Sumber Daya Geologi, Volume 3 No. 3
- Irfand, I. R. dan Yoszi, M.A. 2020. Pemetaan Sebaran Bijih Besi Berdasarkan Kualitas Dengan Metode Inverse Distance Weigthed (Idw) Di Daerah Jorong Pulakek Koto Baru Kabupaten Solok Selatan Jurusan Teknik Pertambangan Fakultas Teknik Universitas Negeri Padang , Vol 6, No 2
- Jensen, M., and Bateman, A.M., 1981. *Economic Mineral Deposits*. Canada : Jhon Wiley and Sons Inc.
- Kothari, C. R., 1990. *Research Methodology, Methods and Techniques*. 2nd ed. Ansari Road, Daryaganj, New Delhi: New Age International (P) Limited, Publishers.
- Kriswarini, R., Anggraini, D., Djamaludin, A., 2010, *Validasi Metoda XRF (X- Ray Fluorescence) Secara Tunggal dan Simultan untuk Analisis Unsur Mg, Mn dan Fe dalam Paduan Aluminium, Prosiding Seminar Nasional VI SDM Teknologi Nuklir*, Yogyakarta.
- Magdalena, M. 2010. Studi Alterasi dan Mineralisasi Tembaga pada Area Tambang Batu Hijau. Institut Teknologi Bandung.
- Maulana, A. 2017. *Endapan Mineral*. Penerbit Ombak : Yogyakarta.
- Mondal, S.K., 2008. Orthomagmatic ore deposits related to ultramafic-mafic rocks. *Journal of the Geological Society of India*, 72, 583-594.
- Mottana, A. 1977. *Guide to Rocks and Minerals*. Simon and Scuster's, New York.

- Munasir, T.M. Zainuri dan Darminto. 2012 *Uji XRD dan XRF pada Bahan Mineral (Batuan dan Pasir) sebagai Sumber Material Cerdas (CaCO<sub>3</sub> dan SiO<sub>2</sub>)*, Surabaya Vol 2 No 1.
- Pardiarto, B., dan Widodo, W., 2007. Genesa besi dan alumina laterit. *Kelompok Kerja Mineral. Pusat Sumber Daya Geologi Bul.*,3,14-24.
- Perkins, D. 2002. *Mineralogy 2nd Edition*. Prentice-Hall Inc, New Jersey. United Stated of America.
- Pirajno, F. 1992. *Hydrothermal mineral deposits principles and fundamental concepts for the exploration geologist*. Springer-Verlag : Berlin.
- Pirajno, F. 2009. *Hydrothermal Processes and Mineral Systems*. Springer : Australia.
- Ramdor, P. 1969. *The Ore Minerals and Their Intergrowth*. Second Edition.
- Ratman, S. Atmawinata., 1993., *Pemetaan Geologi Lembar Mamuju dalam skala 1 : 250.000*, Pusat Penelitian dan Pengembangan Geologi Bandung
- Rice, P., 2015. *Pottery analysis: a sourcebook..* 2nd ed. Chicago : University of Chicago Press
- Rodrigues, F. M., 2003, *Investigation Into The Thermal Upgrading Of Nickeliferous Laterite Ores. A thesis submitted to the Robertbuchan Departement of Mining In Corminity with the requirements for The degree of Master of applied Sciece*, Queens University, Kingston, Toronto, Canada.
- Santoso, D. 2001. *Pengantar Teknik Geofisika*. Penerbit ITB: Bandung
- Sudradjat, M.D.,1987. *Geologi Ekonomi*. Jurusan Geologi. ITB. Bandung : Laboratorium Geologi Ekonomi.
- Sugiyono, P. D., 2013. *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.
- Sukamto R., And Simandjuntak T.O., 1981. ,*Tectonic Reletionship Between Geologic Aspect of Western Sulawesi, Eastern Sulawesi dan Banggai – Sula In The Light Of Sedimentological Aspects*. GRDC Indonesia. Bandung
- Sukamto., 1975. *Geologi Sulawesi*. Departemen Pertambangan dan Energi. Direktorat Jenderal Geologi Dan Sumber Daya Mineral, Pusat Penelitian Dan Pengembangan.
- Sukido, Sukarna, D,. Sutisna, K., 1993. *Peta Geologi Lembar Pasangkayu, Sulawesi, Skala 1 : 250.000* Pusat Penelitian dan Pengembangan Geologi, Bandung.
- Sukandarrumidi. 2004. *Bahan Galian Industri*. Fakultas Teknik UGM, Yogyakarta.
- Simandjuntak, TO., B. Rusmana, Surono dan LB. Supandjono, 1991, *Peta Geologi Bersistem Lembar Malili, Puslitbang Geologi*.
- Warmada, I.W dan. Titisari. A, D. 2004. *Agromineralogi*. Fakultas Teknik UGM, Yogyakarta.

- Yao, L., Xie, G., Mao, J., Lu, Z., Zhao, C., Zheng, X., Ding, N. 2015. Geological, geochronological, and mineralogical constraints on the genesis of the Chengchao skarn Fe deposit, Edong ore district, Middle–Lower Yangtze River Valley metallogenic belt, eastern China. *Journal of Asian Earth Science*. Vol. 101: 69-82.
- Zhou, Z. Mao, J. Che, H. Ouyang, H. Ma, Xinghua. 2017. Metallogeny of the Handagai skarn Fe–Cu deposit, northern Great Xing'an Range, NE China: Constraints on fluid inclusions and skarn genesis. *Ore Geology Reviews*. Vol. 80: 623-644.

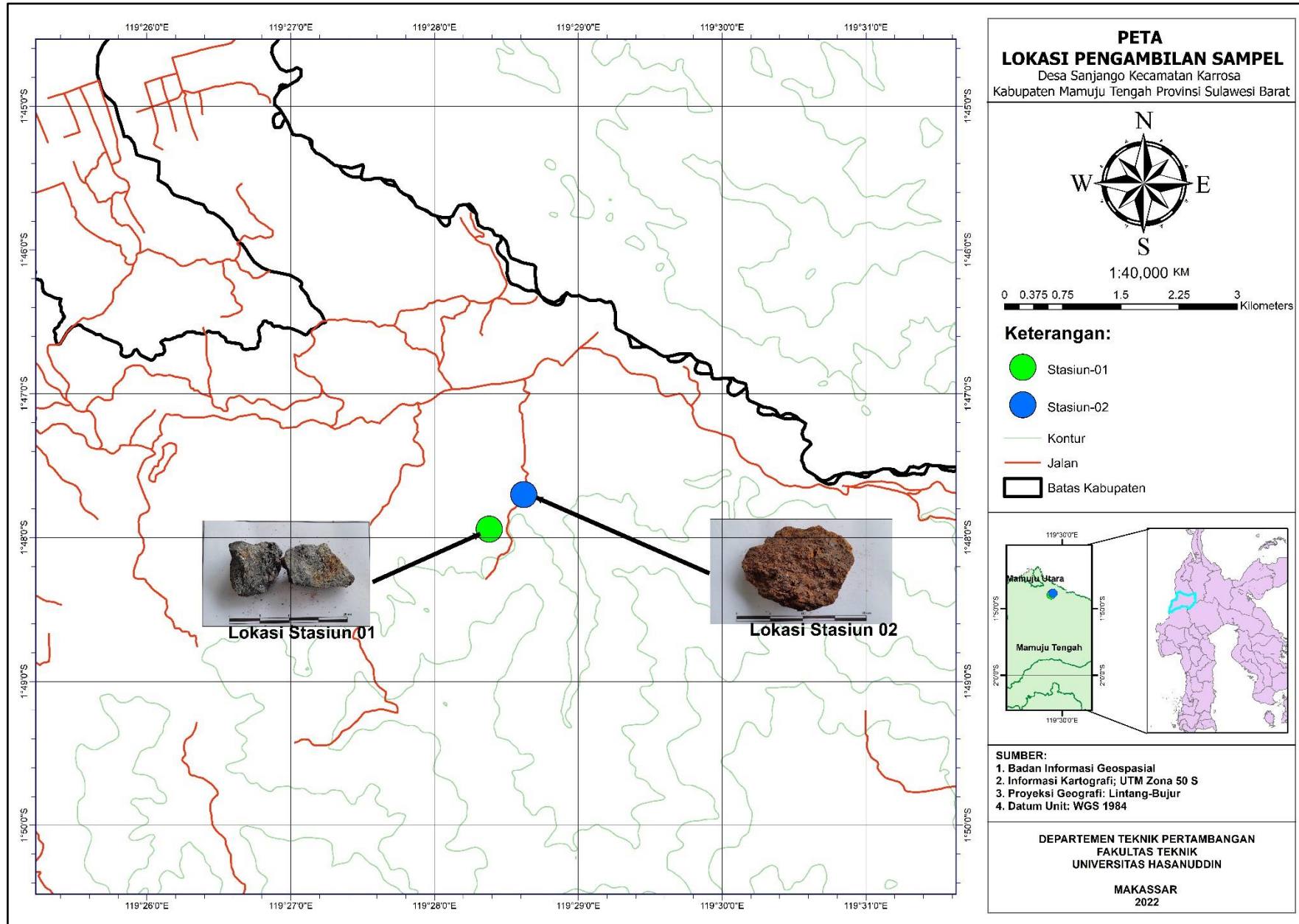
## **LAMPIRAN**

**LAMPIRAN A**  
**PETA LOKASI PENELITIAN**



**LAMPIRAN B**  
**PETA PENGAMBILAN SAMPEL**





**LAMPIRAN C**  
**NAMA MINERAL MENURUT WHITNEY (2010)**

TABLE 1. Updated list of abbreviations

Symbol	Mineral Name	IMA status*	Symbol	Mineral Name	IMA status*	Symbol	Mineral Name	IMA status*
Acm	acmite	D	Chu	clinohumite	G	Ged	gedrite	Rd
Act	actinolite	A	Cpt	clinoptilolite	A	Gh	gehlenite	G
Adl	adularia	I	Cpx	clinopyroxene	GROUP	Gk	geikielite	G
Aeg	aegirine	A	Czo	clinozoisite	G	Gbs	gibbsite	A
Ak	åkermanite	G	Cln	clintonite	A	Gis	gismondine	A
Ab	albite	G	Coe	coesite	A	Glt	glauconite	GROUP
Afs	alkali feldspar	GROUP	Coh	cohenite	G	Gln	glaucophanite	Rd
Aln	allanite	A	Crd	cordierite	G	Gme	gmelinite	A
Alm	almandine	G	Crr	corrensite	G	Gth	goethite	A
Als	aluminosilicate (Al <sub>2</sub> SiO <sub>5</sub> polymorphs)	GROUP	Crn	corundum	G	Gdd	grandierite	G
Alu	alunite	Rd	Cv	covellite	G	Gr	graphite	G
Amk	amakinite	Rd	Crs	crystalite	G	Gre	greenalite	G
Ame	amesite	G	Crt	crossite	D	Grs	grossular	A
Amp	amphibole	GROUP	Crl	cryolite	G	Gru	grunerite	Rd
Anl	analcite (analcite)	A	Cbn	cubanite	G	Gp	gypsum	G
Ant	anatase	A	Cum	cummingtonite	Rd	Hl	halite	G
And	andalusite	G	Cpr	cuprite	G	Hrm	harmotome	A
Adr	andradite	G	Csp	cuspidine	G	Hst	hastingsite	Rd
Ang	anglesite	G	Dph	daphnite	not listed	Hsm	hausmannite	G
Anh	anhydrite	G	Dat	datolite	G	Hyn	häuyne	G
Ank	ankerite	G	Dbr	daubreelite	G	Hzl	heazlewoodite	G
Ann	annite	A	Dee	deerite	A	Hd	hedenbergite	A
An	anorthite	G	Dia	diamond	G	Hem	hematite	A
Ano	anorthoclase	I	Dsp	diaspore	G	Hc	hercynite	G
Ath	anthophyllite	Rd	Dck	dickite	G	Hul	heulandite	A
Atg	antigorite	Rn	Dg	digenite	A	Hbn	hibonite	G
Ap	apatite	GROUP	Di	diopside	A	Hbs	hibschite	Rn
Apo	apophyllite	GROUP	Dpt	diopside	G	Hgb	högbomite	D
Arg	aragonite	G	Dol	dolomite	G	Hol	hollandite	G
Arf	arfvedsonite	A	Drv	dravite	G	Hlm	holmquistite	Rd
Arm	armalcolite	Rd	Dum	dumortierite	G	Hbl	hornblende	GROUP
Apy	arsenopyrite	A	Eas	eastonite	Rd	Hw	howieite	A
Aug	augite	A	Ec	ecandrewsite	A	Hu	humite	G
Awr	awaruite	G	Eck	eckermannite	A	Hgr	hydrogrossular	GROUP
Ax	axinite	GROUP	Ed	edenite	A	Hyp	hypersthene	D
Bab	babingtonite	G	Elb	elbaite	G	Ilt	illite	GROUP
Bdy	baddeleyite	G	Eil	ellenbergerite	A	Ilm	ilmeneite	G
Br	barite (baryte)	A	Eng	enargite	G	Ilv	ilvaite	G
Brs	barroisite	Rd	En	enstatite (ortho-)	A	Jd	jadeite	A
Bei	beidellite	G	Ep	epidote	GROUP	Jrs	jarosite	Rd
Brl	beryl	G	Er	erionite	A	Jim	jimthompsonite	A
Bt	biotite	GROUP	Esk	eskolaite	G	Jhn	johannsenite	A
Bxb	bixbyite	G	Ess	esseneite	A	Krs	kaersutite	Rd
Bhm	böhmite (boehmite)	G	Eud	eudialite	A	Kls	kalsilite	G
Bn	bornite	A	Fas	fassaite	D	Kam	kamacite (-FeNi)	D
Brk	brookite	G	Fa	fayalite	G	Kln	kaolinite	A
Brc	brucite	G	Fsp	feldspar	GROUP	Ktp	kataphorite	Rd
Bst	bustamite	G	Fac	ferro-actinolite	Rd	Kfs	K-feldspar	informal
Cal	calcite	G	Fath	ferro-anthophyllite	Rd	Khl	K-hollandite	H
Ccn	cancriinite	G	Fbrs	ferrobarroisite	A	Kir	kirschsteinite	G
Cnl	cannilloite	H	Fcar	ferrocarpholite	A	Krn	kornepupine	G
Cb	carbonate mineral	GROUP	Fcel	ferroceladonite	A	Kos	kosmochlor	A
Car	carpholite	G	Fec	ferro-eckermannite	Rd	Kut	kutnohorite (kutnahorite)	G
Cst	cassiterite	G	Fed	ferro-edenite	Rd	Ky	kyanite	A
Cel	celadonite	A	Fgd	ferrogedrite	Rd	Lrn	larnite	G
Clf	celestine	A	Fgl	ferroglaucophane	Rd	Lmt	laumontite	A
Cls	celsian	G	Fkrs	ferrokaersutite	A	Lws	lawsonite	G
Cer	cerussite	G	Fny	ferroonyboite	H	Lzl	lazulite	A
Cbz	chabazite	A	Fprg	ferropargasite	Rd	Lzr	lazurite	G
Cct	chalcocite	G	Frct	ferrorichterite	A	Lpd	lepidolite	GROUP
Ccp	chalcopyrite	G	Fs	ferrosilite	Rn	Lct	leucite	G
Chm	chamosite	G	Fts	ferrotschermakite	Rd	Lm	limonite	not listed
Chs	chesterite	A	Fwn	ferrowinchite	Rd	Liq	liquid	
Chl	chlorite	GROUP	Fi	fibrolite (fibrous sillimanite)	informal	Lz	lizardite	G
Cld	chloritoid	G	Fl	fluorite	G	Lo	löllingite (loellingite)	G
Chn	chondrodite	G	Fo	forsterite	G	Mgh	maghemite	G
Chr	chromite	G	Fos	foshagite	G	Marf	magnesian-arfvedsonite	Rd
Ccl	chrysocolla	A	Frk	franklinite	G	Mcar	magnesiocarpholite	A
Ctl	chrysotile	Rd	Ful	fullerite	N	Mfr	magnesianferrite	G
Cin	cinnabar	G	Ghn	gahnite	G	Mhs	magnesianhastingsite	Rd
Cam	clinoamphibole	GROUP	Glx	galaxite	G	Mhb	magnesianhornblende	Rd
Clc	clinochlore	G	Gn	galena	G	Mkt	magnesiankataphorite	Rd
Cen	clinoenstatite	A	Grt	garnet	GROUP			
Cfs	clinoferrrosilite	A						

Symbol	Mineral Name	IMA status*	Symbol	Mineral Name	IMA status*	Symbol	Mineral Name	IMA status*
Mrbk	magnesioriebeckite	Rd	Pgt	pigeonite	A	Tae	taenite (-Fe, Ni)	G
Msdg	magnesiocadanagite	Rd	Pl	plagioclase	GROUP	Tlc	talc	G
Mst	magnesiostauriolite	A	Prh	prehnite	G	Trm	taramite	Rd
Mtm	magnesiostauriolite	Rn	Prm	prismatic	Rd	Tnt	tennantite	G
Mws	magnesiowustite	not listed	Psb	pseudobrookite	Rd	Tnr	tenorite	A
Mgs	magnesite	A	Pmp	pumpellyite-(Al)	A	Tep	tephroite	G
Mag	magnetite	G	Pp	pyrite	G	Ttr	tetrahedrite	A
Maj	majorite	A	Pcl	pyrochlore	A	Thm	thomsonite	A
Mlc	malachite	G	Prp	pyrope	G	Thr	thorite	G
Mng	manganosite	G	Pph	pyrophanite	G	Tly	tilleyite	G
Mrc	marcasite	G	Prl	pyrophyllite	G	Ttn	titanite (sphene)	A
Mrg	margarite	A	Pxf	pyroxferroite	A	Tpz	topaz	G
Mar	marialite	G	Pxm	pyroxmangite	G	Tur	tourmaline	GROUP
Mei	meionite	G	Po	pyrrhotite	G	Tr	tremolite	Rd
MIl	melliite	GROUP				Trd	tridymite	G
Mw	merwinite	G	Qnd	qandilite	A	Tro	troilite	G
Mes	mesolite	A	Qz	quartz	A	Ts	tschermakite	Rd
Mc	microcline	G						
Mlr	millerite	G	Rnk	rankinite	G	Usp	ulvöspinel	G
Mns	minnesotaite	G	Rlg	realgar	G	Urn	uraninite	G
Mog	moganite	A	Rds	rhodochrosite	A	Uv	uvarovite	A
Mol	molybdenite	G	Rdn	rhodonite	A			
Mnz	monazite	A	Rct	richterite	A	Vtr	vaterite	A
Mtc	monticellite	G	Rbk	riebeckite	Rd	Vrm	vermiculite	G
Mnt	montmorillonite	G	Rwd	ringwoodite	A	Ves	vesuvianite	A
Mor	mordenite	A	Rdr	roedderite	A			
Mul	mullite	G	Rsm	rossmanite	A			
Ms	muscovite	A	Rt	rutile	G			
Ntr	natrolite	A	Sdg	sadanagaite	Rd	Wds	wadsleyite	A
Nph	nepheline	G	Sa	sanidine	G	Wag	wagnerite	Rd
Nrb	norbergite	G	Sap	saponite	G	Wrk	wairakite	A
Nsn	nosean	G	Spr	sapphirine	G	Wav	wavellite	A
Nyb	nyböite	Rd	Scp	scapolite	GROUP	Wht	whitlockite	G
			Sch	scheelite	G	Wlm	willmenite	G
Ol	olivine	GROUP	Srl	schorl	G	Wnc	winchite	Rd
Omp	omphacite	A	Scb	schreibersite	G	Wth	witherite	G
Opl	opal	G	Sep	sepiolite	G	Wo	wollastonite	A
Opq	opaque mineral	informal	Ser	sericite	D	Wur	wurtzite	G
Orp	orpiment	G	Srp	serpentine	GROUP	Wus	wüstite	G
Oam	orthoamphibole	GROUP	Sd	siderite	G	Xtm	xenotime	A
Or	orthoclase	A	Sil	sillimanite	G	Xon	xonotite	G
Oen	orthoenstatite	D	Sme	smectite	GROUP			
Opx	orthopyroxene	GROUP	Sdl	sodalite	G	Yug	yugawaralite	A
Osm	osumilite	G	Sps	spessartine	A			
			Sp	sphalerite	A	Zeo	zeolite	GROUP
Plg	palygorskite	G	Spn	sphene (titanite)	D	Znw	zinnwaldite	GROUP
Pg	paragonite	A	Spl	spinel	G	Zrn	zircon	G
Prg	pargasite	Rd	Spd	spodumene	A	Zo	zoisite	G
Pct	pectolite	G	Spu	spurrite	G			
Pn	pentlandite	G	St	staurolite	G			
Per	periclase	G	Stv	stevensite	Q			
Prv	perovskite	G	Stb	stilbite	A			
Ptl	petalite	G	Stp	stipnomelane	A			
PhA	phase A	not listed	Sti	stishovite	A			
Ph	phengite	G	Str	strontianite	G			
Php	phillipsite	A	Sud	sudoite	Rd			
Phl	phlogopite	A	Syl	syvite	G			
Pmt	piemontite	A						

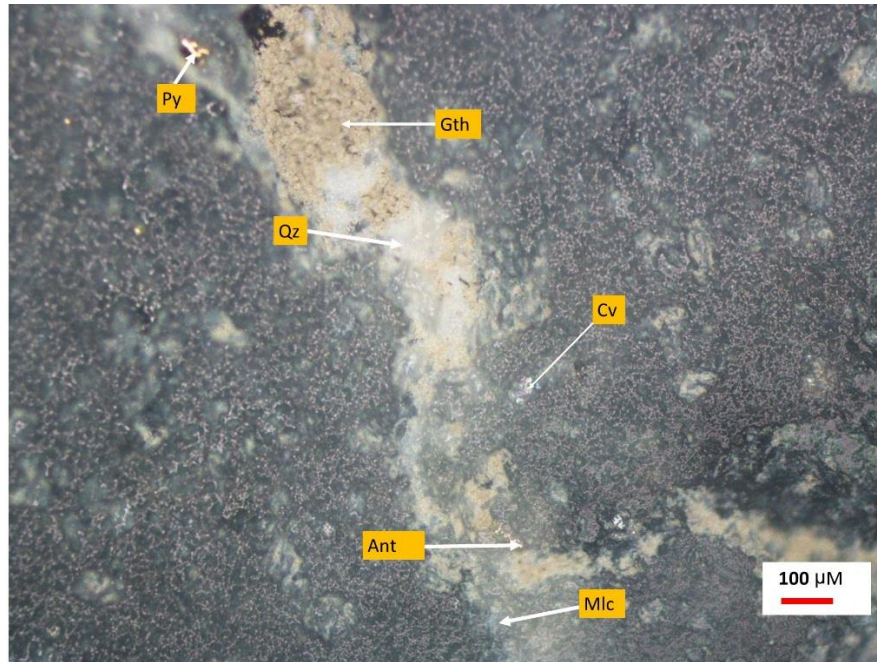
\* International Mineralogical Association (IMA) abbreviat ons: A = Approved; D = Discredited; G = Grandfathered (generally regarded as valid mineral name); GROUP = Name designates a group of mineral species; H = hypothetical (e.g., synthetic); I = intermediate in a solid-solution series; Q = questionable; Rd = Redefinition approved by IMA Commission on New Minerals Nomenclature and Classification (CNMNC); Rn = Renamed with approval of the CNMNC.

**LAMPIRAN D**  
**DESKRIPSI MINERAGRAFI**

## DESKRIPSI MINERALGRAFI

No Sampel : ST 01 A  
 Mineral Bijih : *pyrite, Goethite, Quartz, Anatase, Covelite, Malacite*  
 Referensi : Marshall, (2004)

Foto



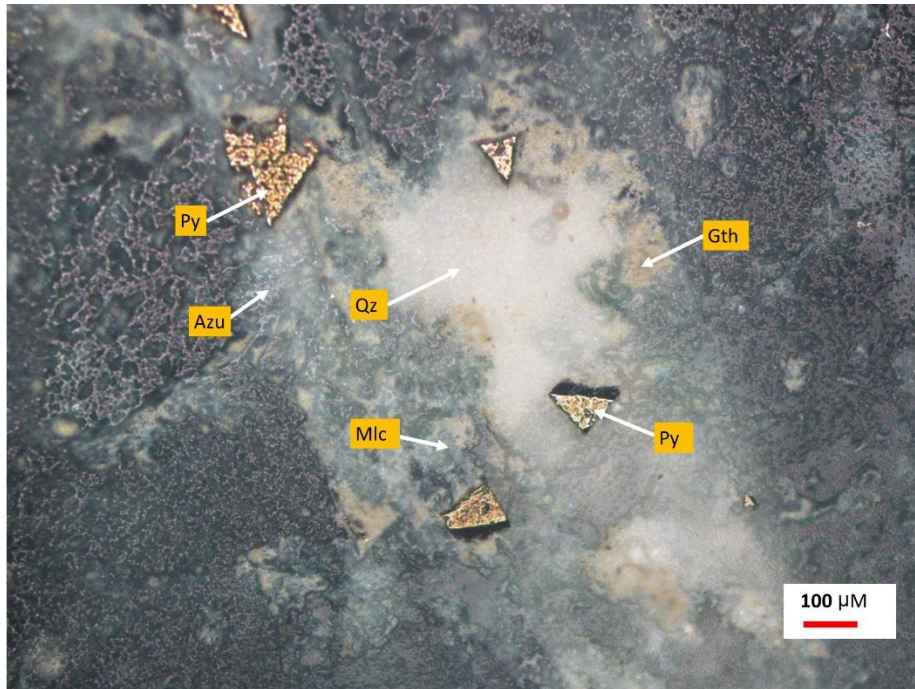
### Deskripsi Mineral

Komposisi Mineral	Keterangan Optik Mineral
<b>Pirite (Py)</b>	Warna kuning keemasan, memiliki relief tinggi, belahan satu arah, pecahan tidak rata, tidak memiliki pleokrisme, dan ukuran mineral 0,05 mm – 0,03 mm.
<b>Goetite (Gth)</b>	Warna coklat kemerahan, memiliki relief rendah, belahan satu arah, pecahan tidak rata, tidak memiliki pleokrisme dan ukuran mineral 0,3 mm – 0,2 mm.
<b>Kuarsa (Qz)</b>	Warna putih, mineral ini memiliki relief rendah, berbentuk subhedral – anhedral, pecahan <i>uneven</i> pleokroisme monokroik, dan ukuran mineral 0,3 mm – 0,35 mm.
<b>Anatase (Ant)</b>	Warna coklat keabu-abuan, relief rendah, bentuk anhedral, belahan sempurna, tidak memiliki pleokrisme, ukuran mineral 0,02 mm – 0,06 mm.
<b>Covelite (Cv)</b>	Warna biru ke abuabuan, relief rendah, bentuk subhedral - anhedral, belahan satu arah tidak memiliki pleokrisme, ukuran 0,01 mm – 0,02 mm.
<b>Malakite ( Mlc )</b>	Warna hijau kehitaman, relief rendah, intensitas rendah, bentuk anhedral, belahan sempurna ukuran 0,1 mm – 0,15 mm.

## DESKRIPSI MINERALGRAFI

No Sampel : ST 01 B  
 Mineral Bijih : *pyrite* , *Goethite*, *Quartz*, *Azurite*  
 Referensi : Marshall, (2004)

Foto



### Deskripsi Mineral

Komposisi Mineral	Keterangan Optik Mineral
<b>Pirite (Py)</b>	Warna Kuning keemasan, memiliki relief tinggi, belahan satu arah, pecahan tidak rata, tidak memiliki pleokrisme dan ukuran mineral 0,1 mm – 0,15 mm.
<b>Goetite (Gth)</b>	Warna coklat kemerahan, memiliki relief rendah, bentuk subhedral – anhedral, belahan satu arah, pecahan tidak rata, tidak memiliki pleokrisme dan ukuran mineral 0,08 mm – 0,1 mm.
<b>Kuarsa (Qz)</b>	Warna putih, mineral ini memiliki relief rendah, berbentuk subhedral – anhedral, pecahan <i>uneven</i> pleokroisme monokroik, dan ukuran mineral 0,3 mm – 0,4 mm.
<b>Azurite (Azu)</b>	Warna biru, memiliki relief rendah, bentuk subhedral – anhedral, memiliki pleokrisme dan ukuran mineral 0,01 mm – 0,02 mm.
<b>Malakite (Mlc)</b>	Warna hijau kehitaman, relief rendah, intensitas rendah, bentuk anhedral, belahan sempurna, tidak memiliki pleokrisme dan ukuran 0,1 mm – 0,15 mm.

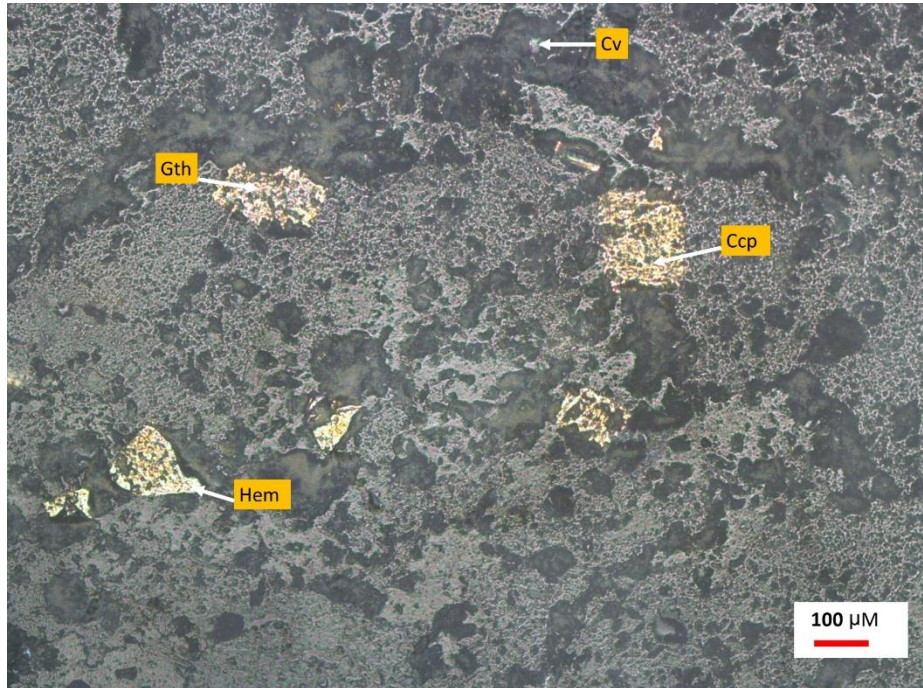
## DESKRIPSI MINERALGRAFI

No Sampel : ST 02 A

Mineral Bijih : *pyrite, Goethite Quartz, Covelite, Hematite*

Referensi : Marshall, (2004)

Foto



### Deskripsi Mineral

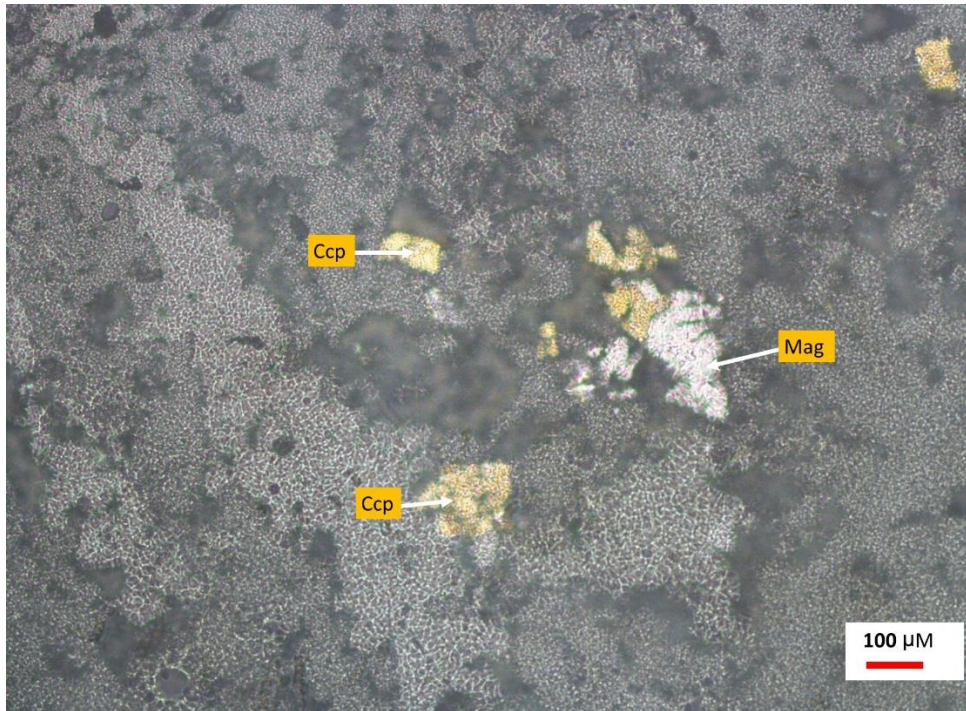
Komposisi Mineral	Keterangan Optik Mineral
<b>Covelite (Cv)</b>	Warna biru, relief rendah, bentuk subhedral - anhedral, memiliki pecahan konkoidal dan belahan sempurna, tidal memiliki pleokrisme, ukuran 0,01 mm – 0,02 mm.
<b>Goetite (Gth)</b>	Warna coklat kemerahan, memiliki relief rendah, bentuk subhedral – anhedral, belahan satu arah, pecahan tiidak rata, tidak memiliki pleokrisme dan ukuran mineral 0,08 mm – 0,1 mm.
<b>Pirite (Py)</b>	Warna Kuning keemasan, memiliki relief tinggi, belahan satu arah, pecahan tidak rata, tidak memiliki pleokrisme dan ukuran mineral 0,1 mm – 0,15 mm.
<b>Hematite (Hem)</b>	Warna abu-abu perak bentuk subhedral – anhedral tidak ada pleokrisme ukuran mineral 0,03 mm – 0,04 mm.



## DESKRIPSI MINERALGRAFI

No Sampel : ST 02 B  
Mineral Bijih : *Calcopyrite* dan *Magnetite*  
Referensi : Marshall, (2004)

Foto



### Deskripsi Mineral

Komposisi Mineral	Keterangan Optik Mineral
<b>Kalkopirite (Ccp)</b>	Warna kuning cerah, bentuk anhedral, memiliki belahan tidak sempurna, pecahan tidak rata tidak memiliki pleokrisme memiliki relief tinggi, dan ukuran mineral 0,1 mm – 0,15 mm.
<b>Magnetite (Mag)</b>	Warna abu-abu kehitaman, memiliki relief tinggi, belahan satu arah, pecahan tidak rata, tidak memiliki pleokrisme dan ukuran mineral 0,05 mm – 0,1 mm.

**LAMPIRAN E**  
**HASIL ANALISIS AAS**

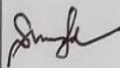
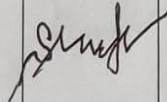
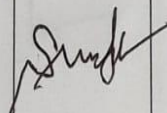


IDENT	UNITS	DET.LIM	SCHEME	SJG 01	SJG 02
Au1	PPB	1	FA50/GF	>100	23
Au1	PPM	1	FA50/GF	>0.1	0,023
Au2	PPB	1	FA50/GF	>100	24
Au2	PPM	1	FA50/GF	>0.1	0,024
Au3	PPB	1	FA50/GF		
Au3	PPM	1	FA50/GF	0	0
Au4	PPB	1	FA50/GF		
Au4	PPM	1	FA50/GF	0	0
Pd	PPB	1	FA50/GF	3	3
Pd	PPM	1	FA50/GF	0,003	0,003
Pt	PPB	5	FA50/GF	<5	<5
Pt	PPM	5	FA50/GF	<0.005	<0.005
Au1	PPM	0,005	FA50/AA	1,25	
Au2	PPM	0,005	FA50/AA	1,37	
Au4	PPM	0,005	FA50/AA		
Al	PPM	50	4A/OE	450	2740
Ca	PPM	50	4A/OE	130	<50
Cr	PPM	5	4A/OE	5	6
Cu	PPM	1	4A/OE	25400	1720
Fe	%	0,01	4A/OE	2,91	>50
Fe	PPM	1,01	4A/OE	0,000291	>0.005
K	PPM	20	4A/OE	70	80
Mg	PPM	20	4A/OE	40	40
Mn	PPM	1	4A/OE	451	6
Na	PPM	20	4A/OE	60	<20
Ni	PPM	1	4A/OE	<1	2
P	PPM	50	4A/OE	400	200
S	PPM	50	4A/OE	>150000	3710
Sc	PPM	1	4A/OE	<1	<1
Ti	PPM	5	4A/OE	10	60
V	PPM	1	4A/OE	1	29
Zn	PPM	1	4A/OE	>50000	1950
Ag	PPM	0,1	4A/MS	190	0,8
As	PPM	1	4A/MS	354	1380
Ba	PPM	1	4A/MS	24	8
Be	PPM	0,5	4A/MS	<0.5	<0.5
Bi	PPM	0,05	4A/MS	0,58	21,9
Cd	PPM	0,05	4A/MS	1540	5,68
Co	PPM	1	4A/MS	<1	<1
Cs	PPM	0,1	4A/MS	<0.1	<0.1
Ga	PPM	0,1	4A/MS	11,7	11,5
Ge	PPM	0,1	4A/MS	3,8	6,1
Hf	PPM	0,1	4A/MS	<0.1	0,1
In	PPM	0,05	4A/MS	0,56	1,63
Li	PPM	0,1	4A/MS	1,1	<0.1
Mo	PPM	0,1	4A/MS	16	61,9
Nb	PPM	0,1	4A/MS	<0.1	0,2
Pb	PPM	1	4A/MS	>10000	486
Rb	PPM	0,1	4A/MS	0,6	0,3
Re	PPM	0,05	4A/MS	<0.05	<0.05
Sb	PPM	0,1	4A/MS	739	33,7
Se	PPM	1	4A/MS	4	<1


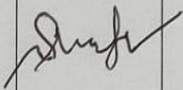
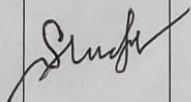

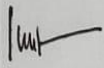
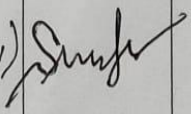
<b>Sn</b>	PPM	0,1	4A/MS	0,6	0,5
<b>Sr</b>	PPM	0,5	4A/MS	2,8	0,8
<b>Ta</b>	PPM	0,05	4A/MS	<0.05	<0.05
<b>Te</b>	PPM	0,1	4A/MS	<0.1	1,2
<b>Th</b>	PPM	0,05	4A/MS	<0.05	0,37
<b>Tl</b>	PPM	0,02	4A/MS	1,57	0,02
<b>U</b>	PPM	0,05	4A/MS	0,12	0,12
<b>W</b>	PPM	0,1	4A/MS	3,3	0,3
<b>Y</b>	PPM	0,1	4A/MS	<0.1	0,3
<b>Zr</b>	PPM	0,5	4A/MS	<0.5	3,6
<b>Ce</b>	PPM	0,1	4A/MS11	0,2	1,1
<b>Dy</b>	PPM	0,1	4A/MS11	<0.1	0,1
<b>Er</b>	PPM	0,1	4A/MS11	<0.1	<0.1
<b>Eu</b>	PPM	0,1	4A/MS11	<0.1	<0.1
<b>Gd</b>	PPM	0,1	4A/MS11	<0.1	<0.1
<b>Ho</b>	PPM	0,1	4A/MS11	<0.1	<0.1
<b>La</b>	PPM	0,1	4A/MS11	<0.1	0,4
<b>Lu</b>	PPM	0,05	4A/MS11	<0.05	<0.05
<b>Nd</b>	PPM	0,1	4A/MS11	<0.1	0,5
<b>Pr</b>	PPM	0,05	4A/MS11	<0.05	0,11
<b>Sm</b>	PPM	0,1	4A/MS11	<0.1	<0.1
<b>Tb</b>	PPM	0,05	4A/MS11	<0.05	<0.05
<b>Tm</b>	PPM	0,1	4A/MS11	<0.1	<0.1
<b>Yb</b>	PPM	0,1	4A/MS11	<0.1	<0.1
<b>Al2O3</b>	%	0,01	FB1/XRF250	0,33	0,56
<b>CaO</b>	%	0,01	FB1/XRF250	<0.01	<0.01
<b>Cr2O3</b>	%	0,01	FB1/XRF250	<0.01	<0.01
<b>Fe2O3</b>	%	0,01	FB1/XRF250	3,99	85,01
<b>K2O</b>	%	0,01	FB1/XRF250	0,02	<0.01
<b>MgO</b>	%	0,01	FB1/XRF250	0,35	0,06
<b>MnO</b>	%	0,01	FB1/XRF250	0,04	<0.01
<b>Na2O</b>	%	0,01	FB1/XRF250	13,06	0,01
<b>P2O5</b>	%	0,002	FB1/XRF250	<0.002	0,049
<b>SiO2</b>	%	0,01	FB1/XRF250	11,95	0,96
<b>TiO2</b>	%	0,01	FB1/XRF250	<0.01	0,02
<b>S</b>	%	0,002	FB1/XRF250	>2	0,573
<b>LOI</b>	%	0,01	LOI	13,84	12,92

**Lampiran B 10**  
**Kartu Konsultasi Tugas Akhir**

**JUDUL:** Studi Mineralisasi Biji ~~...~~ Pada Daerah  
Saryango Kecamatan Karossa Kabupaten  
Mamuju Tengah Provinsi Sulawesi Barat

(Konsultasi minimal 8 kali)

TANGGAL	MATERI KONSULTASI	PARAF DOSEN
4/4/2022	Asistensi judul dan rumusan masalah penelitian	
12/4/2022	konsultasi data penelitian	
24/5/2022	konsultasi BAB I, II, III	
14/6/2022	konsultasi BAB IV dan V	
7/7/2022	Asistensi laporan lengkap dan data penelitian	

TANGGAL	MATERI KONSULTASI	PARAF DOSEN
21/7/2022	Asistensi perbaikan laporan lengkap (Abstrak, BAB I, II, III, IV dan V)	
3/8/2022	Asistensi perbaikan format penulisan, Pappus, dan hasil analisis	
24/8/2022	Asistensi laporan lengkap Artikel dan poster	
23/9/2022	All laporan lengkap	
27/9/2022	Asistensi laporan lengkap (Revisi Seminar hasil)	
29/9/2022	Asistensi BAB II dan IV (revisi)	
3/10/2022	Asistensi laporan lengkap	