

## DAFTAR PUSTAKA

- Abendanon, E.C., 1915. Geologische en geographische doorkruisingen van Midden-Celebes (1909-1910): *Leiden, E.J. Brill, v.I, 451 p.*
- Apandi, T., Ratman, N., dan Yusup, 1982, Laporan Geologi Lembar Mamuju, Sulawesi, skala 1: 250.000. Pro. P.G.I.F., Bid. Geo. Reg. Puslitbang Geologi.
- Aronoff, 1989. *Geographic Information Systems: A Management Perspective* Ottawa.
- Badan Informasi Geospasial (BIG), 2015. Citra Satelit Optis Resolusi Sangat Tinggi untuk Kebutuhan Nasional. Jakarta.
- Choerunnisa. T. 2019. *Karakteristik Kimia Batugamping Kompleks Kromong Kabupaten Cirebon, Provinsi Jawa Barat*. Padjadjaran Geoscience Journal. Vol. 3, No. 6. Pp 449-458
- Deddi, Sutisna, T., Sukmana dan Zulkifli, 1984, Peyelidikan Pendahuluan Geologi, Pendulangan dan Geokimia Daerah Kecamatan Budong-budong, Kabupaten Mamuju, Sulawesi Selatan. Seksi Mineral Vulkanogenik, Sub. Dit.Mift Log. SDM.
- Dunham, R. J, 1962. *Classification of Carbonate Rocks According to Depositional Texture*, in Ham W. E., ed., *classification of Carbonate Rocks*, AAPG Memoir I.
- Djumhani dan Pudjowaluyo, H., 1976. Laporan 5 tahun Peta tahap I, Bagian Pemetaan dan Penyelidikan Mineral daerah Sulawesi Selatan Blok 5, 1969-1979, Direktorat Geologi.
- Djuri, Sudjatmiko, Bachri, S., dan Sukido, 1998. Pemetaan Geologi Regional Lembar Majene dan Bagian Barat Palopo dalam skala 1 : 250.000, Pusat Penelitian dan Pengembangan Geologi (P3G) Bandung
- Gallant, J. C., Downling, T. I., Read, A. M, Wilson, N., Tickle, P., and Inskip, C., 2011. *1 second SRTM Derived Products User Guide v1.0.4*. Canberra: Geoscience Australia. Retrieved from [www.ga.gov.au/topographicmapping/digital-elevation-data.html](http://www.ga.gov.au/topographicmapping/digital-elevation-data.html).
- Gumma MK, T. P., 2011. Mapping irrigated areas of Ghana using fusion of 30 m and 250 m resolution remotesensing data. *Remote Sensing*, 816-835.
- Hadi, A.D., Dono Guntoro, dan Yunus Ashari, 2021. *Estimasi Sumberdaya Batugamping di PT X, Kecamatan Palimanan, Kabupaten Cirebon, Provinsi Jawa Barat*. Journal Riset Teknik Pertambangan. Volume 1, No. 2, Tahun 2021, Hal: 148-154.
- Hatman, H,L., 1992. *SME Mining Engineering Handbook 2nd Edition Volume 1*, 344-359, Society for Mining Metallurgy and Exploration Inc, Colorado.
- Hell, B., and Jakobsson, M., 2011. Gridding Heterogeneous Bathymetric Data Sets with Stacked Continuous Curvature Splines in Tension. *Marine Geophysical Research, Volume 32* (4): 493–501. <https://doi.org/10.1007/s11001-011-9141-1>.

- KCMI, 2017. *Kode Pelaporan Hasil Eksplorasi, Sumberdaya Mineral dan Cadangan Bijih*. Jakarta. Hal. 10-16
- Leba FA. 2011. Penaksiran Sumberdaya Batubara dengan Metode Cross Section. Jurusan Teknik Tambang Fakultas Teknologi Mineral UPN "Veteran" Yogyakarta.
- Leeuwen Th.M. van, 1981, The Geology of Southwest Sulawesi with Special Reference to the Biru Area. In: Bather Al. & Wiryosujono, S. The Geology and Tectonics of Eastern Indonesia, GRDC, *Spec. Publ.* No. 2, 1981, pp.177-304.
- Lillesand, T. M., 2015. *Remote Sensing and Image Interpretation*. New York: Jhon Willey & Son.
- Madiadipoera, T. 1990. *Bahan galian industri di Indonesia*. Direktorat Jenderal Sumber Daya Mineral RI.
- Marshner.H. 1968. Ca-Mg Distribution in Carbonates from the Lower Keuper in NW Germany. *Development in Carbonate Sedimentology in Central Europe*, Ed. Hal.127-135.
- Mulyono, S., 2004. *Riset Operasi*, Lembaga Penerbit Fakultas Ekonomi UI, Jakarta.
- Nurhakim, 2006. *Bahan Kuliah Teknik Eksplorasi Prodi Teknik Pertambangan Fakultas Teknk Universitas Lambung Mangkurat*, Lambung Mangkurat.
- Permana, A. 2018. Potensi batugamping terumbu Gorontalo sebagai bahan galian industri berdasarkan analisis geokimia XRF. *EnviroScienteeae*, 14(3), 174–179. <https://doi.org/10.20527/es.v14i3.5688>.
- Petti John, 1990. *Lime in industrial*.
- Prayudha, B., dan Suyarso, 2015. Aplikasi Sistem Informasi Geografi Untuk Pemetaan Genangan Rob Dengan Studi Kasus. In Fahmi & D. E. D. Setyono (Eds.), *Kondisi Lingkungan Pesisir dan Perairan Probolinggo, Jawa Timur* (pp. 163–178). Jakarta: LIPI Press.
- Ratman, N. dan Atmawinata, S., 1993. Geology of the Mamuju Quadrangle Sulawesi. *Department Of Mines And Energy Directorate General Of Geology And Mineral Resources Geological Research And Development Centre. Bandung*.
- Ratman, N. dan Atmawinata, S., 1993. Pemetaan Geologi Lembar Mamuju dalam skala 1 : 250.000, Pusat Penelitian dan Pengembangan Geologi, Bandung.
- Rusmana, E., Sukido, Sukarna, D., Haryono, E., dan Simandjuntak, T.O., 1993. *Peta Geologi Lembar Lasusua-Kendari, Sulawesi, skala 1 : 250.000*. Pusat Penelitian dan Pengembangan Geologi.
- Santika, A. W., dan Mulyadi, D. 2017. Geokimia batugamping daerah Montong, Tuban, Jawa Timur. *RISSET Geologi dan Pertambangan*, 27(2), 227–238. <https://doi.org/10.14203/risetgeotam2017.v27.493>
- Seksi Mineral Vulkanogenik, 1980, Laporan penyelidikan geologi dan geokimia tinjau regional daerah basin S. Lamasi dan S. Sadari, Kecamatan Sesean dan

Kecamatan Walenrang, Kabupaten Tana Toraja dan Kabupaten Luwu, Sulawesi Selatan, Sub. Dit. Eksp. Min. Log. DSM,

- Suhala, S., & Arifin, M. 1997. *Bahan galian industri*. Pusat Penelitian dan Pengembangan Teknologi Mineral.
- Suhala, Supriatna., 1997. *Bahan Galian Industri*, Pusat Penelitian dan Pengembangan Teknologi Mineral, Bandung.
- Sukandarrumidi, 1997. *Bahan Galian Industri*, Gajah Mada University Press, Bulaksumur, Yogyakarta.
- Sukido, D. Satria dan S Koesoemadinata, 1997, *Peta geologi Lembar Enrekang Sulawesi*, skala 1 : 100.000, Puslitbang Geologi.
- SNI. 2011. *Klasifikasi Sumberdaya dan Cadangan Batubara*. Standar Nasional Indonesia: Jakarta.
- Todd, Thomas W, 1966. Petrogenetic Classification of Carbonate Rocks. *Jurnal of Sedimentary Petrology*, vol. 36, No.2, hal.317-340.
- United State Geological Survey (USGS), 2015. *LANDSAT 8 (L8) DATA USERS HANDBOOK Version 1.0* (Vol. 8).
- Wandy M., Saismana U., Riswan R., Hakim RN., Gusfrimanuel G., 2016. Perhitungan Cadangan Batubara Dan Perancangan Pit PT Anugrah Karya Raya, Desa Penain, Kec. Teweh Tengah Kabupaten Barito Utara, Kalimantan Tengah. *Jurnal Geosapta*, Vol. 1. Hal 15-18.
- Waterman, S. 2018. *Geostatistik Edisi Ketiga*. Kilau Book, Yogyakarta.
- Widayat, A.H., 2005. *Metode Perhitungan Cadangan*, Departemen Teknik Pertambangan Fakultas Ilmu Kebumihan Dan Teknologi Mineral Institut Teknologi Bandung, Bandung.

# LAMPIRAN

**LAMPIRAN A**  
**CONTOH DATA TOPOGRAFI HASIL CITRA SATELIT**  
**BIG (BADAN INFORMASI GEOSPASIAL) DAN USGS**  
***(UNITED STATE GEOLOGICAL SURVEY)***

---

**Data Citra Satelit BIG (Badan Informasi Geospasial)**

---

<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>
526040.2153	3162092.008	12.87656688650
526040.2933	3162102.761	11.36085891720
526040.3713	3162113.514	9.70501422842
526040.4494	3162124.267	7.96242904630
526040.5274	3162135.019	6.52615356445
526040.6055	3162145.772	5.30591154069
526040.6835	3162156.525	4.02924346924
526040.7615	3162167.278	2.89777898766
526040.8396	3162178.031	1.94328951836
526040.9176	3162188.784	1.15792083740
526040.9956	3162199.537	0.99466425179
526041.0737	3162210.29	0.91767448187
526041.1517	3162221.043	0.85332715511
526041.2298	3162231.796	0.82066541910
526041.3078	3162242.548	0.81350386143
526041.3858	3162253.301	0.85493016246
526041.4639	3162264.054	0.99707818031
526041.5419	3162274.807	1.03809046755
526041.62	3162285.56	1.47614717484
526041.698	3162296.313	1.97115767002
526041.776	3162307.066	2.47324037564
526041.8541	3162317.819	2.98770380020
526041.9321	3162328.572	3.45845198644
526042.0102	3162339.324	4.01233339310
526042.0882	3162350.077	4.76185560226
526042.1662	3162360.83	5.55446958570
526042.2443	3162371.583	6.75252676010

<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>
526042.3223	3162382.336	8.40941238438
526042.4003	3162393.089	9.88519477844
526042.4784	3162403.842	10.94560146350
526042.5564	3162414.595	11.53068733230
526042.6345	3162425.347	12.02703666690
526042.7125	3162436.1	12.71096229570
526042.7905	3162446.853	13.44214820860
526042.8686	3162457.606	14.14063644430
526042.9466	3162468.359	14.87534046170
526043.0246	3162479.112	15.74022579190
526043.1027	3162489.865	16.18266868600
526043.1807	3162500.618	16.39574432370
526043.2588	3162511.371	16.61193656930
526043.3368	3162522.124	16.95234298710
526043.4148	3162532.876	17.08175849910
526043.4929	3162543.629	17.35507392890
526043.5709	3162554.382	17.59539031980
526043.6489	3162565.135	17.89912033100
526043.727	3162575.888	18.73373603820
526043.805	3162586.641	19.23126029970
526043.883	3162597.394	20.33541488680
526043.9611	3162608.147	21.70185470580
526044.0391	3162618.9	22.70168685940
526044.1172	3162629.652	23.79373168950
526044.1952	3162640.405	25.32818031370
526044.2732	3162651.158	27.80857276970
526044.3513	3162661.911	30.13512611390
526044.4293	3162672.664	32.52890777630
526044.5073	3162683.417	34.43819427490

<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>
526044.5854	3162694.17	35.77746963520
526044.6634	3162704.923	36.47848129290
526044.7414	3162715.676	37.07796859740
526044.8195	3162726.428	38.00826644920
526044.8975	3162737.181	38.87478256230
526044.9755	3162747.934	39.08125686660
526045.0536	3162758.687	39.61486434940
526045.1316	3162769.44	39.97774887080
526045.2097	3162780.193	40.05744171150
526045.2877	3162790.946	40.57700347900
526045.3657	3162801.699	41.00428009040
526045.4438	3162812.452	41.44356918330
526045.5218	3162823.205	41.93946075440
526045.5998	3162833.957	42.35486221340
526045.6779	3162844.71	43.54921722410
526045.7559	3162855.463	44.68413162250
526045.8339	3162866.216	45.27650070190
526045.912	3162876.969	46.25198364260
526045.99	3162887.722	47.18341827410
526046.068	3162898.475	47.92329788210
526046.1461	3162909.228	48.32250976570
526046.2241	3162919.981	48.54825592040
526046.3021	3162930.733	48.62363433840
526046.3802	3162941.486	48.61857604980
526046.4582	3162952.239	48.59062194820
526046.5362	3162962.992	48.58780670170
526046.6143	3162973.745	48.64126205440
526046.6923	3162984.498	48.70960998540
526046.7703	3162995.251	49.01054382320



<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>
526046.8484	3163006.004	49.39985275270
526046.9264	3163016.757	49.97703933720
526047.0044	3163027.51	50.28266906740
526047.0825	3163038.262	50.42147064210
526047.1605	3163049.015	50.48820495610
526047.2385	3163059.768	50.50994491580
526047.3166	3163070.521	50.49653625490
526047.3946	3163081.274	50.65616607670
526047.4726	3163092.027	50.96073150640
526047.5507	3163102.78	51.14774322510
526047.6287	3163113.533	51.74204635620
526047.7067	3163124.286	52.24254989630
526047.7848	3163135.038	52.59463500980
526047.8628	3163145.791	52.84322357180
526047.9408	3163156.544	53.05082702640
526048.0189	3163167.297	53.28280639650
526048.0969	3163178.05	53.52087402350
526048.1749	3163188.803	53.64430618290
526048.253	3163199.556	53.70901489270
526048.331	3163210.309	54.01891326900
526048.409	3163221.062	54.57908630390
526048.4871	3163231.814	55.28471374530
526048.5651	3163242.567	56.24249649050
526048.6431	3163253.32	57.61081314100
526048.7212	3163264.073	58.30921554570
526048.7992	3163274.826	58.73345184330
526048.8772	3163285.579	58.99483108520
526048.9553	3163296.332	59.01582336430
526049.0333	3163307.085	59.48063659680

<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>
526049.1113	3163317.838	59.97609329220
526049.1893	3163328.591	60.00102615360
526049.2674	3163339.343	60.04863739010
526049.3454	3163350.096	60.05448150630
526049.4234	3163360.849	60.12543487550
526049.5015	3163371.602	60.24146652220
526049.5795	3163382.355	60.39628601080
526049.6575	3163393.108	60.62105560300
526049.7356	3163403.861	61.03804016110
526049.8136	3163414.614	61.87917327910
526049.8916	3163425.367	62.92642974850
526049.9697	3163436.119	63.90605926530
526050.0477	3163446.872	64.58094787600
526050.1257	3163457.625	64.99812316900
526050.2037	3163468.378	65.38778686540
526050.2818	3163479.131	65.98383331300
526050.3598	3163489.884	66.88761138940
526050.4378	3163500.637	67.93841552730
526050.5159	3163511.39	69.00799560570
526050.5939	3163522.143	70.05075073240
526050.6719	3163532.896	71.11036682130
526050.75	3163543.648	72.11536407490
526050.828	3163554.401	73.02201080320
526050.906	3163565.154	73.68216705330
526050.984	3163575.907	74.20291900630
526051.0621	3163586.66	74.70722961430
526051.1401	3163597.413	75.28131103530
526051.2181	3163608.166	75.91672515870
526051.2962	3163618.919	76.47248840340

<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>
526051.3742	3163629.672	76.88252258300
526051.4522	3163640.425	77.29614257810
526051.5303	3163651.177	77.67929077160
526051.6083	3163661.93	78.01101684570
526051.6863	3163672.683	78.12498474120
526051.7643	3163683.436	78.00725555420
526051.8424	3163694.189	77.95976257320
526051.9204	3163704.942	77.87221527100
526051.9984	3163715.695	77.80303955080
526052.0765	3163726.448	77.81859588630
526052.1545	3163737.201	77.98873138430
526052.2325	3163747.954	78.40127563490
526052.3105	3163758.706	79.15555572530
526052.3886	3163769.459	80.23086547850
526052.4666	3163780.212	81.27934265150
526052.5446	3163790.965	81.94593811040
526052.6227	3163801.718	82.10013580340
526052.7007	3163812.471	82.94015502930
526052.7787	3163823.224	84.02304077150
526052.8567	3163833.977	85.13955688500
526052.9348	3163844.73	86.23724365230
526053.0128	3163855.482	87.60322570830
526053.0908	3163866.235	88.76118469240
526053.1688	3163876.988	89.00630187990
526053.2469	3163887.741	89.11992645260
526053.3249	3163898.494	89.09051513670
526053.4029	3163909.247	89.02069854740
526053.481	3163920	89.08624267580
526053.559	3163930.753	89.97061920170
526053.637	3163941.506	92.05655670230
526053.715	3163952.259	94.94219970700

---

**Data Citra Satelit USGS**

---

<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>
526042.1082	3162094.651	2961.52734375000
526042.1862	3162105.401	2966.01538086000
526042.2642	3162116.151	2972.07397461000
526042.3423	3162126.9	2980.59570313000
526042.4203	3162137.65	2991.29882813000
526042.4983	3162148.4	3002.30200196000
526042.5763	3162159.15	3012.65405273000
526042.6544	3162169.9	3022.22778320000
526042.7324	3162180.649	3031.63281250000
526042.8104	3162191.399	3039.27465820000
526042.8884	3162202.149	3043.97485352000
526042.9665	3162212.899	3047.60205078000
526043.0445	3162223.649	3049.49951172000
526043.1225	3162234.398	3049.94287109000
526043.2005	3162245.148	3049.37475586000
526043.2785	3162255.898	3047.98486328000
526043.3566	3162266.648	3045.79199219000
526043.4346	3162277.398	3042.97998047000
526043.5126	3162288.147	3038.36767578000
526043.5906	3162298.897	3032.95629883000
526043.6686	3162309.647	3027.88696289000
526043.7467	3162320.397	3022.94042969000
526043.8247	3162331.147	3018.27392578000
526043.9027	3162341.896	3012.85644531000
526043.9807	3162352.646	3006.96997070000
526044.0588	3162363.396	2999.21704102000
526044.1368	3162374.146	2989.90380859000

<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>
526044.2148	3162384.896	2980.16235351000
526044.2928	3162395.645	2970.68017578000
526044.3708	3162406.395	2963.07006836000
526044.4489	3162417.145	2959.63281250000
526044.5269	3162427.895	2958.33740234000
526044.6049	3162438.645	2958.00805664000
526044.6829	3162449.394	2958.00415039000
526044.7609	3162460.144	2957.94360352000
526044.839	3162470.894	2956.06640625000
526044.917	3162481.644	2953.62255859000
526044.995	3162492.394	2951.25122070000
526045.073	3162503.143	2950.44921875000
526045.151	3162513.893	2947.01220703000
526045.2291	3162524.643	2943.63500977000
526045.3071	3162535.393	2942.17187500000
526045.3851	3162546.143	2937.87890625000
526045.4631	3162556.892	2933.03540039000
526045.5411	3162567.642	2925.91455078000
526045.6192	3162578.392	2922.45703125000
526045.6972	3162589.142	2919.14404297000
526045.7752	3162599.892	2916.08691406000
526045.8532	3162610.641	2913.35278320000
526045.9312	3162621.391	2912.37158203000
526046.0093	3162632.141	2908.08251953000
526046.0873	3162642.891	2902.48193359000
526046.1653	3162653.641	2896.66943359000
526046.2433	3162664.39	2889.88574219000
526046.3213	3162675.14	2881.12158203000
526046.3994	3162685.89	2873.16894531000

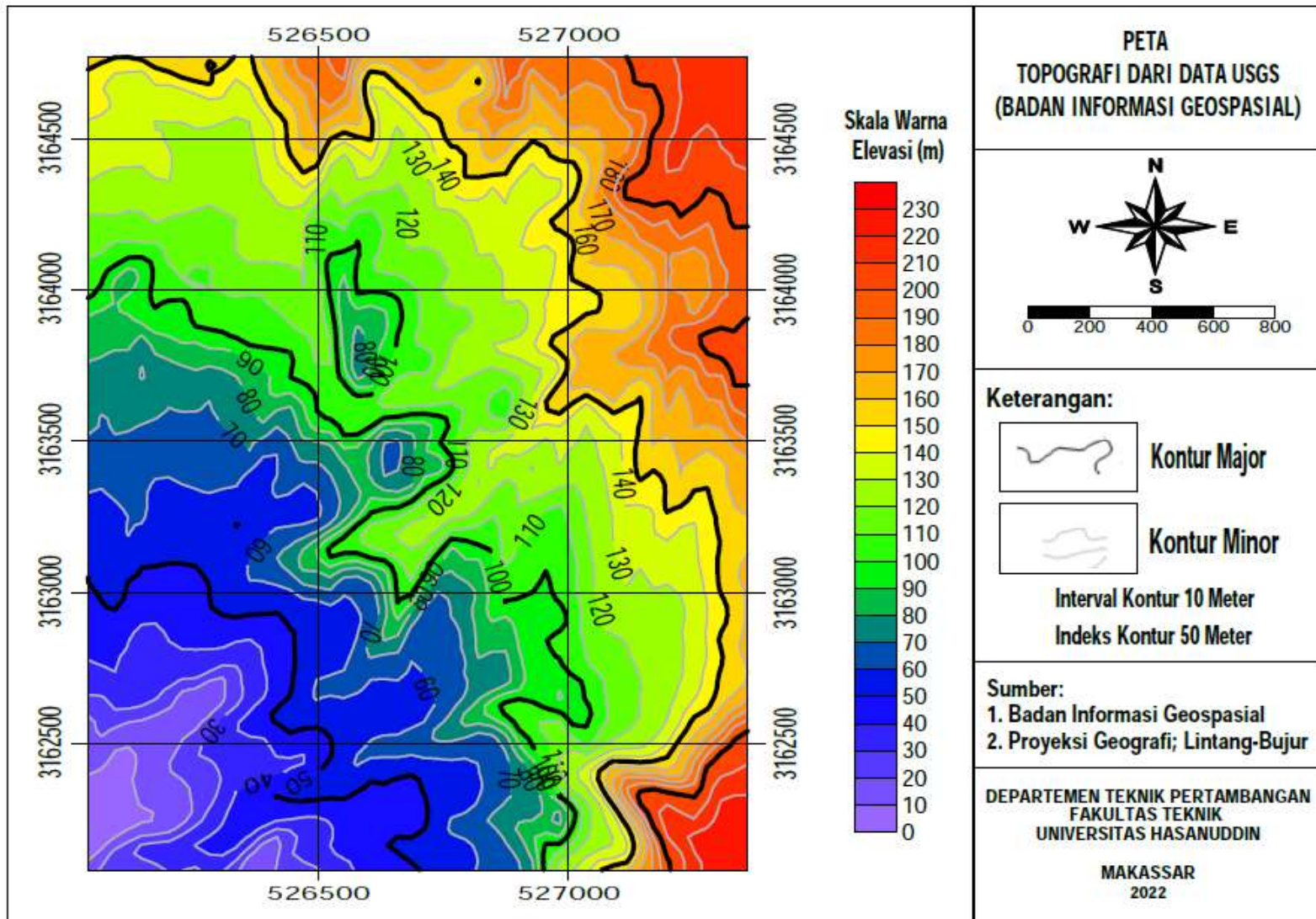
<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>
526046.4774	3162696.64	2865.52978516000
526046.5554	3162707.39	2857.90698242000
526046.6334	3162718.139	2851.03833008000
526046.7114	3162728.889	2846.17578125000
526046.7894	3162739.639	2841.82202148000
526046.8675	3162750.389	2837.89453125000
526046.9455	3162761.139	2835.99243164000
526047.0235	3162771.889	2831.00878906000
526047.1015	3162782.638	2824.56591797000
526047.1795	3162793.388	2817.19653320000
526047.2576	3162804.138	2810.31982422000
526047.3356	3162814.888	2806.19213867000
526047.4136	3162825.637	2801.00952148000
526047.4916	3162836.387	2796.00732422000
526047.5696	3162847.137	2791.22973633000
526047.6476	3162857.887	2786.41015625000
526047.7257	3162868.637	2781.96142578000
526047.8037	3162879.386	2778.24121094000
526047.8817	3162890.136	2775.41503906000
526047.9597	3162900.886	2774.69897461000
526048.0377	3162911.636	2772.25122070000
526048.1158	3162922.386	2769.53222656000
526048.1938	3162933.135	2766.99804688000
526048.2718	3162943.885	2765.04663086000
526048.3498	3162954.635	2764.19335937000
526048.4278	3162965.385	2762.85180664000
526048.5058	3162976.135	2760.41040039000
526048.5839	3162986.885	2757.75390625000
526048.6619	3162997.634	2755.09472656000

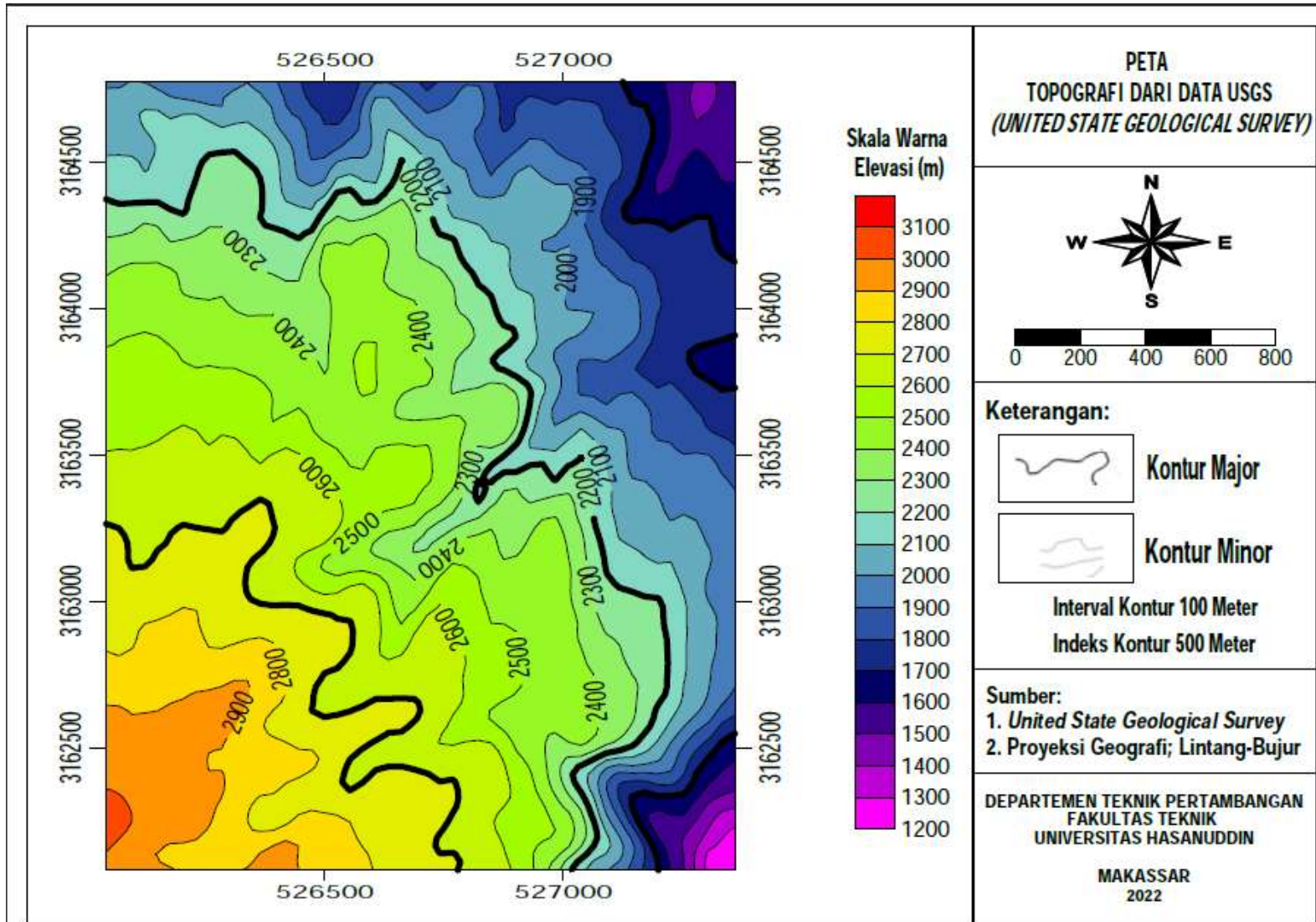
<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>
526048.7399	3163008.384	2752.52465820000
526048.8179	3163019.134	2751.33935547000
526048.8959	3163029.884	2748.73608398000
526048.9739	3163040.633	2746.68457031000
526049.052	3163051.383	2745.28051758000
526049.13	3163062.133	2744.54199219000
526049.208	3163072.883	2745.23681641000
526049.286	3163083.633	2746.04150391000
526049.364	3163094.382	2746.29931641000
526049.442	3163105.132	2745.82568359000
526049.5201	3163115.882	2744.89257813000
526049.5981	3163126.632	2744.35205078000
526049.6761	3163137.382	2744.06176758000
526049.7541	3163148.132	2743.62353516000
526049.8321	3163158.881	2742.55322266000
526049.9101	3163169.631	2740.45068359000
526049.9881	3163180.381	2738.12500000000
526050.0662	3163191.131	2732.72729492000
526050.1442	3163201.881	2726.58349609000
526050.2222	3163212.63	2720.62597656000
526050.3002	3163223.38	2716.68579101000
526050.3782	3163234.13	2713.17578125000
526050.4562	3163244.88	2709.56176758000
526050.5343	3163255.63	2705.18676758000
526050.6123	3163266.379	2698.75781250000
526050.6903	3163277.129	2692.01806640000
526050.7683	3163287.879	2686.59130859000
526050.8463	3163298.629	2681.80859375000
526050.9243	3163309.379	2677.56933594000

<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>
526051.0023	3163320.128	2674.51025391000
526051.0804	3163330.878	2670.89257812000
526051.1584	3163341.628	2666.85449219000
526051.2364	3163352.378	2662.90527344000
526051.3144	3163363.128	2661.51318359000
526051.3924	3163373.877	2658.43115234000
526051.4704	3163384.627	2654.90576172000
526051.5484	3163395.377	2651.06811523000
526051.6265	3163406.127	2646.92797852000
526051.7045	3163416.877	2642.43603516000
526051.7825	3163427.626	2637.83520508000
526051.8605	3163438.376	2633.37963867000
526051.9385	3163449.126	2629.20581055000
526052.0165	3163459.876	2623.21484375000
526052.0945	3163470.626	2617.09082031000
526052.1726	3163481.375	2611.60375977000
526052.2506	3163492.125	2607.84912109000
526052.3286	3163502.875	2604.16748047000
526052.4066	3163513.625	2600.23486328000
526052.4846	3163524.375	2596.11035156000
526052.5626	3163535.124	2591.90332031000
526052.6406	3163545.874	2587.65869141000
526052.7186	3163556.624	2583.04443359000
526052.7967	3163567.374	2578.29443359000
526052.8747	3163578.124	2573.52343750000
526052.9527	3163588.874	2569.02441406000
526053.0307	3163599.623	2565.45458984000
526053.1087	3163610.373	2564.95532227000
526053.1867	3163621.123	2563.95703125000

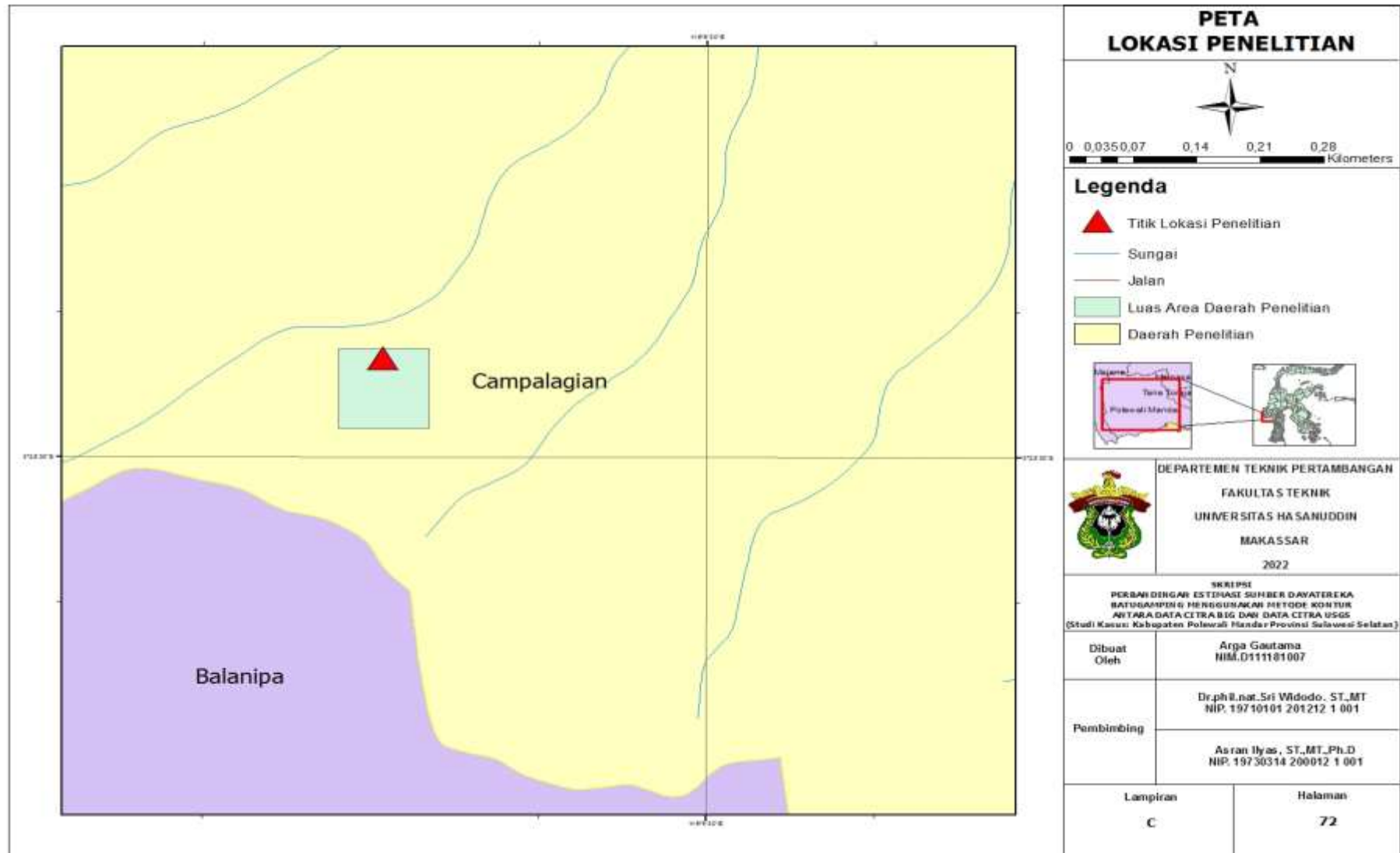


**LAMPIRAN B**  
**PETA TOPOGRAFI DATA CITRA BIG (BADAN**  
**INFORMASI GEOSPASIAL) DAN USGS (*UNITED***  
***STATE GEOLOGICAL SURVEY*)**





**LAMPIRAN C**  
**PETA TUNJUK LOKASI PENELITIAN**



**LAMPIRAN D**  
**HASIL REPORT ANALISI XRD**



# Match! Phase Analysis Report

Sample: DOL-01 (5-70)

Sample Data  
 File name DOL-01.RAW  
 File path D:\Data XRD-Prof.Adi\DOL-01  
 Data collected Sep 7, 2021 13:07:27  
 Data range 5.000° - 70.000°  
 Original data range 5.000° - 70.000°  
 Number of points 3251  
 Step size 0.020  
 Rietveld refinement converged No  
 Alpha2 subtracted No  
 Background subtr. No  
 Data smoothed Yes  
 Radiation X-rays  
 Wavelength 1.540600 Å

## Matched Phases

Index	Amount (%)	Name	Formula sum
A	76.6	Calcite	C Ca O3
B	17.2	Quartz	O2 Si
C	6.2	Magnesite	C Mg O3
	0.3	Unidentified peak area	

### A: Calcite (76.6 %)

Formula sum C Ca O3  
 Entry number 96-900-9668  
 Figure-of-Merit (FoM) 0.945477  
 Total number of peaks 43  
 Peaks in range 18  
 Peaks matched 16  
 Intensity scale factor 0.98  
 Space group R-3 c  
 Crystal system trigonal (hexagonal axes)  
 Unit cell a= 4.9910 Å c= 17.0680 Å  
 V/c 3.72  
 Calc. density 2.708 g/cm<sup>3</sup>  
 Reference Sitepu H., O'Connor B.H., Li D., "Comparative evaluation of the March and generalized spherical harmonic preferred orientation models using X-ray diffraction data for polydisperse calcite powders Note: March model Locality: synthetic", Journal of Applied Crystallography 38, 158-167 (2005)

### B: Quartz (17.2 %)

Formula sum O2 Si  
 Entry number 96-900-9667  
 Figure-of-Merit (FoM) 0.751363  
 Total number of peaks 35  
 Peaks in range 15  
 Peaks matched 5  
 Intensity scale factor 0.19  
 Space group P 31 2 1  
 Crystal system trigonal (hexagonal axes)  
 Unit cell a= 4.9158 Å c= 5.4091 Å  
 V/c 3.17  
 Calc. density 2.644 g/cm<sup>3</sup>  
 Reference Guàrdia A. F., "Accuracy of XRPD GFA using the combined Rietveld-RIR method Locality: Bavono, Novara, Italy", Journal of Applied Crystallography 38, 267-278 (2005)

### C: Magnesite (6.2 %)

Formula sum C Mg O3  
 Entry number 96-900-0974  
 Figure-of-Merit (FoM) 0.628107  
 Total number of peaks 33  
 Peaks in range 11  
 Peaks matched 5  
 Intensity scale factor 0.04  
 Space group R-3 c  
 Crystal system trigonal (hexagonal axes)  
 Unit cell a= 4.6420 Å c= 15.0960 Å  
 V/c 1.95  
 Calc. density 2.982 g/cm<sup>3</sup>  
 Reference Markgraf S. A., Reeder R. J., "High-temperature structure refinements of calcite and magnesite Sample: T = 300 C", American Mineralogist 70, 590-600 (1985)

⚠️ Theta values have been shifted internally for the calculation of the amounts, the intensity scaling factors as well as the figure-of-merit (FoM), due to

the active search-match option 'Automatic zero point adaption'.

### Candidates

Name	Formula	Entry No.	FoM
	Fe <sub>2</sub> Mo O <sub>4</sub>	99-591-0306	0.5508
	Ag <sub>2</sub> Se	99-150-9714	0.5430
Periclase	Mg O	99-900-0497	0.5404
Periclase	Mg O	99-900-6755	0.5404
Boron nitride	B N	99-101-0603	0.5399
Fe (Ir0.05 Rh0.95)	Fe Ir0.05 Rh0.95	99-152-6238	0.5371
(Os0.2 V0.8)	Os0.2 V0.8	99-152-2775	0.5364
Periclase	Mg O	99-900-0498	0.5356
Periclase	Mg O	99-900-6756	0.5356
Periclase	Mg O	99-900-6461	0.5329
Periclase	Mg O	99-900-6460	0.5316
germanium antimony telluride	Ge0.77 Sb0.15 Te	99-723-4484	0.5288
Co <sub>2</sub> (Cr0.2 Mn0.8) Ga	Co <sub>2</sub> Cr0.2 Ga Mn0.8	99-152-6318	0.5277
Nb <sub>3</sub> Ge	Ge Nb <sub>3</sub>	99-412-4631	0.5273
(Tc0.8 Si0.2)	Si0.2 Tc0.8	99-152-7279	0.5245
	Cl K0.4 Na0.6	99-900-3228	0.5228
	Cl K0.4 Na0.6	99-900-3224	0.5209
	Pr <sub>3</sub> Te <sub>4</sub>	99-153-6877	0.5203
	In Ni <sub>2</sub>	99-153-6617	0.5188
	Pr <sub>2</sub> 667 Te <sub>4</sub>	99-153-6933	0.5183
	Mg O <sub>4</sub> Rh <sub>2</sub>	99-591-0186	0.5180
	Sm <sub>2</sub> 667 Te <sub>4</sub>	99-154-1236	0.5179
Periclase	Mg O	99-900-6757	0.5174
(Ir0.18 V0.82)	Ir0.18 V0.82	99-152-3685	0.5173
	Ag I	99-901-1697	0.5172
	Pd <sub>3</sub> Ti	99-152-2857	0.5165
Antimony	Sb	99-901-3395	0.5164
	Co O <sub>4</sub> Rh <sub>2</sub>	99-591-0231	0.5161
	Ni Ti	99-901-4316	0.5124
Nb <sub>3</sub> (Au0.3 Ge0.7)	Au0.3 Ge0.7 Nb <sub>3</sub>	99-151-0098	0.5122
	Cl K0.2 Na0.8	99-900-3284	0.5117
	Li Pd	99-153-6005	0.5109
	Bi Na <sub>2</sub> Sb Se <sub>4</sub>	99-705-6491	0.5095
Calcite	C Ca O <sub>3</sub>	99-901-6707	0.5088
Boron Nitride	B N	99-591-0080	0.5080
Sylvanite	Ag Au Te <sub>4</sub>	99-900-0027	0.5066
Sr Ga Ge H	Ga Ge H Sr	99-412-4022	0.5055
(Cr0.02 Ge0.98) Te	Cr0.02 Ge0.98 Te	99-152-6347	0.5048
	Ru V	99-152-7762	0.5047
	Pr <sub>4</sub> Sb <sub>3</sub>	99-231-0912	0.5041
germanium lithium antimony telluride	Ge0.6 Li0.2 Sb0.2 Te	99-433-6236	0.5036
	Ce Se	99-153-7356	0.5028
Supercubane	C	99-901-2342	0.5026
	Cu <sub>20</sub> Sn <sub>6</sub>	99-210-6489	0.5008

### Search-Match

Settings	
Reference database used	COD-Inorg REV048644 2020.03.03
Automatic zeropoint adaption	Yes
Minimum figure-of-merit (FoM)	0.60
2theta window for peak com.	0.30 deg.
Minimum rel. int. for peak com.	1
Parameter/influence 2theta	0.50
Parameter/influence Intensities	0.50
Parameter multiple/single phase(s)	0.50

### Peak List

No.	2theta [°]	d [Å]	I/I0	FWHM	Matched
1	20.94	4.2389	13.78	0.3719	B
2	23.15	3.8395	52.55	0.3600	A
3	26.60	3.3490	193.49	0.3200	B
4	29.52	3.0235	1000.00	0.3200	A
5	29.99	2.9770	8.87	0.4400	
6	31.54	2.8343	17.44	0.3400	A
7	32.45	2.7566	26.69	0.3200	C
8	35.58	2.5212	33.66	0.3200	C
9	36.05	2.4896	129.04	0.3200	A
10	38.90	2.3130	34.75	0.3400	C
11	39.52	2.2784	141.69	0.2800	A,B
12	42.41	2.1298	12.91	0.2800	B
13	42.78	2.1122	37.28	0.3200	C
14	43.27	2.0893	150.30	0.2800	A
15	43.68	2.0706	38.18	0.2800	
16	47.22	1.9234	50.62	0.2800	A



17	47.62	1.9082	146.69	0.3200	A
18	48.63	1.8709	150.84	0.2800	A
19	51.54	1.7718	16.15	0.2400	C
20	54.32	1.6875	8.87	0.3827	
21	56.68	1.6228	25.79	0.3200	A
22	57.53	1.6006	71.12	0.3200	A
23	60.79	1.5224	38.38	0.3200	A
24	61.68	1.5026	13.25	1.3190	
25	63.18	1.4705	15.06	0.3239	A
26	64.79	1.4377	40.11	0.3600	A
27	65.74	1.4193	24.26	0.3600	A,B

### Integrated Profile Areas

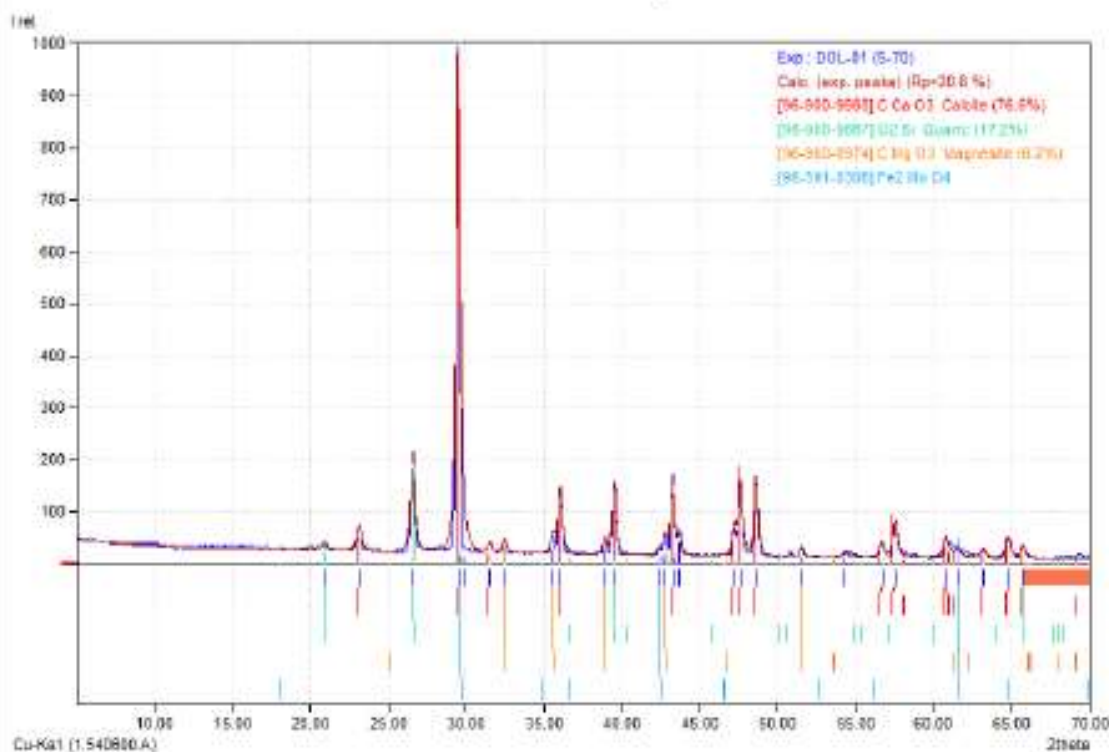
Based on calculated profile

Profile area	Counts	Amount
Overall diffraction profile	749841	100.00%
Background radiation	475718	63.44%
Diffraction peaks	274123	36.56%
Peak area belonging to selected phases	204618	27.29%
Peak area of phase A (Calcite)	171161	22.83%
Peak area of phase B (Quartz)	26632	3.56%
Peak area of phase C (Magnesite)	6504	0.91%
Unidentified peak area	69506	9.27%

### Peak Residuals

Peak data	Counts	Amount
Overall peak intensity	6394	100.00%
Peak intensity belonging to selected phases	6139	96.01%
Unidentified peak intensity	255	3.99%

### Diffraction Pattern Graphics



Match! Copyright © 2003-2020 CRYSTAL IMPACT, Bonn, Germany

# **LAMPIRAN E**

## **LEMBAR KONSULTASI**

Lampiran B 10

Kartu Konsultasi Tugas Akhir

**JUDUL:** Perbandingan Estimasi Sumber Daya Terakumulasi Batubara  
 Menggunakan Metode Galini Antara Data Citra  
 Satelit Informasi Geospasial Dan United State Geological  
 Survey  
 (Konsultasi minimal 8 kali)

TANGGAL	MATERI KONSULTASI	PARAF DOSEN
3/10/2022	- Perbaiki foto Bab 2 lurus 2.1. dan - Perbaikan pada Bab 2 Lurus mengenai batubara	<i>[Signature]</i>
4/10/2022	- perbaiki pada Tujuan dan aktualisasi dengan lampiran	<i>[Signature]</i>
5/10/2022	- perbaiki Tujuan atau tambahkan 1 poin untuk tujuan mengenai identifikasi batubara - perbaiki flowchart yang sesuai dengan metode penelitian yang dilakukan	<i>[Signature]</i>

TANGGAL	MATERI KONSULTASI	PARAF DOSEN
6/10/2021	perbaiki artikel ilmiah pada nama penulis dan program studinya.	<i>[Signature]</i>
7/10/2021	ACC	<i>[Signature]</i>