minerals

MDPI

Article

Diagenesis and the conditions of deposition of the Middle Jurassic siderite rocks from the northern margin of the Holy Cross Mountains (Poland)

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Supplementary Materials

Table S1. Composition of clayey siderites (vol. %)*

Borehole	Depth (m]	Age	Siderite	Clay minerals	Quartz	Feldspars	Micas	Pyrite	Organic matter	Intraclast	Bioclasts	Ooids	Other
Gutwin	147.7	Bt1	73.0	10.0	15.0	0.0	0.0	2.0	0.0	tr	0.0	0.0	0.0
	162.3	Bt1	62.0	2.0	33.7	0.7	0.0	0.0	0.3	1,0	0.3	0.0	0.0
	164.15	Bt1	75.0	15.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	176.3	Bj2	69.0	8.0	20.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.0Hm
	191.1	Bj2	69.0	8.0	20.0	tr	0.0	0.0	tr	0.0	1.0	2.0	0.0
	220.6	Bj2	77.0	15.0	5.0	0.0	0.0	2.0	1.0	0.0	0.0	0.0	0.0
	232.7-233.0	Bj2	75.0	20.0	5.0	0.0	0.0	0.0	0.0	0.0	tr	0.0	0.0
	290.1	Aa1	52.0	15.0	30.0	0.0	1.0	tr	2.0	0.0	0.0	0.0	0.0
Justynów PIG 1	17.0	Bj2 (?)	55.0	30.0	5.0	tr	0.0	0.0	0.0	0.0	0.0	0.0	10.0Ph
	18.5	Bj2 (?)	60.0	10.0	25.0	0.0	3.0	tr	2.0	0.0	0.0	0.0	0.0
	19.8	Bj2 (?)	75.0	20.0	3.0	0.0	1.0	tr	1.0	0.0	0.0	0.0	0.0
	20.3	Bj2 (?)	64.0	10.0	25.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0
	25.5	Bj2 (?)	55.0	5.0	32.0	tr	1.0	tr	2.0	0.0	0.0	0.0	0.0
Mniszków IG 1	958.0	Bt1	67.7	8.7	11.7	0.3	0.7	0.3	0.3	0.0	tr	1.0	9.3Ank
	958.4	Bt1	89.0	3.0	5.0	tr	0.0	0.0	1.0	0.0	tr	0.0	2.0Ank
	959.5	Bt1	62.3	5.7	29.7	tr	0.0	tr	0.6	1.0	0.0	0.7	0.0
	961.0	Bt 1	68.0	7.3	16.0	0.0	0.7	tr	1.0	0.0	0.3	1.0	5.7Ank trZrn
Mołdawa	146.5	Bt1-2	90.0	3.0	5.0	0.0	tr	1.0	1.0	0.0	tr	0.0	0.0
	244.1	Bt1-2	63.0	0.0	33.0	2.3	0.3	0.0	0.0	0.0	0.0	0.0	1.4Gth L
	274.1	Bj2?	70.7	5.3	15.3	0.0	0.3	0.8	1.0	0.0	1.3	3.0	2.3Cal
	304.5	Bj2	71.3	2.0	20.7	3.0	0.0	0.0	1.3	0.0	1.0	0.0	0.7L
	313.4	Bj2	45.7	8.0	35.0	1,3	0.3	0.0	2.3	0.0	1.7	5.4	0.3Cal
	384.7	Bj2	85.0	0.0	8.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	5.0Ank
	388.0	Bj2	80.0	5.0	5.0	0.0	tr	0.0	1.0	0.0	0.0	0.0	9.0Cal
	401.3	Bj2	52.7	7.0	35.6	0.7	0.0	1.7	2.0	0.0	0.0	0.3	0.0
	451.5	Aa1	71.0	4.7	17.0	1.0	0.0	2.3	4.0	0.0	0.0	0.0	0.0
Omięcin XI/2	36.0	Bj2	71.7	12.3	13.3	0.0	1.7	0.0	0.0	0.0	1.0	tr	0.0
	67.7-68.2	Bj2	51.0	1.0	43.3	0.3	0.0	0.0	0.0	0.0	2.7	1.7	0.0

	116.0-116.2	Aa1(?)	59.0	3.7	30.3	0.0	0.0	0.0	0.3	tr	6.0	0.7	0.0
Omięcin XI/3	132.2	Bj2	63.0	4.3 cl-fe	30.0	0.3	0.0	0.0	0.0	0.0	0.7	1.7	0.0
	144.5	Bj2	54.7	10.3	26.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0Ank
	166.9	Bj2	82.0	10.0	5.0	0.0	3.0	0.0	tr	0.0	0.0	0.0	0.0
	184.4	Bj2	58.0	0.0	17.0	0.0	0.0	0.0	0.0	0.0	10.3	tr	14.7Ank
	200.0	Bj2	52.7	11.7	35.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0
	204.2	Bj1(?)	58.3	0.4	31.7	0.0	0.3	0.0	0.3	0.0	2.3	0.0	6.7Ank
	225.0	Aa1(?)	50.0	0.4	43.7	0.3	0.0	0.0	0.0	1.0	0.3	4.3	0.0
	234.0	Aa1-J1(?)	64.4	2.3	31.3	0.3	0.0	0.0	0.7	0.0	0.0	1.0	tr Zrn
Wąglany k/ Opoczna	312.5	Bt1-2	50.3	0.3	27.7	0.7	0.3	0.0	0.3	0.0	5.0	0.0	14.Ank 0.7Hm
	314.5	Bt1-2	83.0	10.0	5.0	tr	0.0	0.0	0.0	0.0	tr	0.0	2.0Ank
	361.2	Bt1-2	90.0	5.0	5.0	0.0	tr	0.0	0.0	0.0	0.0	0.0	0.0
	395.2	Bt1-2	57.7	3.3	12.0	0.0	0.0	0.0	1.7	1.7	7.3	18.0	0.0
	400.0	Bt1-2	50.0	2.7	45.7	1.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0
	406.0	Bt1-2	59.7	4.0	34.3	0.3	0.7	0.0	1.0	0.0	0.0	0.0	0.0
	412.4	Bt1-2	67.2	4.3	21.7	0.7	0.3	0.0	0.7	0.7	2.7	1.7	0.0
	419.2	Bt1-2	60.0	9.4	25.3	1.0	1.3	0.0	2.4	0.3	0.0	0.0	0.3Kl
	424.6	Bj2	54.4	8.0	34.3	1.0	0.3	0.0	0.7	1.0	0.3	0.0	0.0
	457.8	Bj2	61.0	2.3	34.7	0.0	0.3	0.0	1.7	0.0	0.0	0.0	tr Kao
	465.5	Bj2	68.6	2.0	25.7	0.0	1.7	0.0	2.0	0.0	0.0	0.0	0.0
	501.6	Bj2	80.0	10.0	8.0	tr	2.0	tr	0.0	0.0	tr	0.0	tr Ank
	512.3	Bj2	63.6	7.0	22.7	0.0	1.0	0.0	0.0	0.7	0.0	1.0	4.0Ank
	588.0	Aa2	50.0	30.0	2.0	0.0	0.0	tr	3.0	0.0	10	0.0	5.0Ank
	597.2	Aa1	67.4	8.4	11.3	tr	0.3	0.0	2.7	0.3	0.3	9.3	0.0
Władysław	184.4	Bt1-2	80.0	4.0	10.0	1.0	tr	0.0	0.0	0.0	0.0	0.0	0.0
	242.7	Bt1 -2	98	1.0	1.0	0.0	0.0	0.0	tr	0.0	0.0	0.0	0.0
	264.02	Bt1-2	75.3	4.3	18.0	0.7	0.0	0.0	0.0	0.0	0.7	0.0	1.0Fe-hy
	295.6	Bt1-2	96	1.0	1.0	0.0	0.0	tr	2.0	0.0	0.0	0.0	0.0
	296.6	Bt1-2(?)	85	1.0	3.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
	309.9	Bj2	50.0	4.3	28.7	0.0	0.0	0.7	4.6	0.0	0.0	0.0	11.7Cal
	395.8	Aa2	76.7	11.0	10.0	0.3	0.0	1.0	1.0	0.0	0.0	0.0	0.0
	396.3	Aa1	88	1.0	10.0	0.0	tr	1.0	tr	0.0	0.0	0.0	0.0
Wyszmontów 1	61.65	Bt1-2	92	5.0	2.0	0.0	tr	tr	1.0	0.0	0.0	0.0	0.0
	77.5-77.6	Bt1-2	77.6	0.7	19.0	0.0	0.7	0.0	0.7	1.3	0.0	0.0	0.0
	77.9	Bt1-2	77.0	2.0	19.0	0.0	0.7	0.0	0.3	1.0	0.0	0.0	0.0
	80.5	Bt1-2	66.7	8.0	12.0	0.0	0.0	0.0	2.0	0.0	0.3	11.0	0.0

	84.6	Bt1-2	67.0	10.0	16.7	0.0	0.3	0.0	0.7	0.0	9.3	tr	0.0
	92.8	Bj2	88	2.0	3.0	0.0	2.0	0.0	3.0	0.0	2.0	0.0	0.0
	103.7	Bj2	50.0	8.3	21.0	0.0	0.4	2.0	1.7	0.3	5.0	1.3	10.0Cal
	125.0	Bj2	53.7	9.7	11.0	0.0	1.3	12.7	1.6	0.0	1.7	0.0	8.3Cal
	126.3	Bj2	92.7	1.0	3.7	0.0	0.3	0.0	2.0	0.0	0.3	0.0	0.0
	129.3	Bj2	66.7	6.0	18.0	0.0	0.0	0.0	0.6	0.0	2.7	1.0	5.0Cal
	135.1	Bj2	50	40.0	8.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0
Wyszmontów PIG 2	29.1	Bj2 (?)	50.0	13.3	32.0	0.7	1.3	0.0	2.7	0.0	0.0	0.0	0.0
	30.7	Bj2 (?)	69.0	12.3	10.7	0.0	1.7	0.0	6.3	0.0	0.0	0.0	0.0
	31.8	Bj2 (?)	79.0	13.4	7.3	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
	34.6	Bj2 (?)	50.3	3.0	1.3	0.0	0.0	1.0	0.0	0.0	5.7	28.7	10.0 Cal
Zalesie Antoniowskie	206.2	Bj2	90	2.0	5.0	0.0	tr	1.0	1.0	0.0	1.0	0.0	0.0
	278.5	Aa2	49.0	7.7	17.3	0.7	0.0	0.7	0.0	0.0	0.0	24.3	0.3L
	279.3	Aa2	58.3	8.3 cl-fe	13.0	0.0	0.3	1.3	0.3	0.0	0.7	16.0	1.8Cal

* the quantification of constituents was executed by counting 300 points in each of thin sections. Ank – ankerite, Cal - calcite, Fs – feldspar, Gth – goethite, Glt – glauconite, cl-fe – clay-ferruginous, Hm– hematite, Fe-hy – iron hydroxides, Kao – kaolinite, L – lithoclasts, Ph – phosphates, Pt – pistomesite, Sd – siderite, Sdp – sideroplesite, Qza – authigenic quartz, Zrn – zircon, sph – spherolite, tr – trace, cls – clayey siderite, sst – siderite sandstone; J1 – Lower Jurassic, Aa1 – Lower Aalenian, Aa2 – Upper Aalenian, Bj1 – Lower Bajocian, Bj2 – Upper Bajocian, Bt1 – Lower Bathonian, Bt2 – Middle Bathonian, Bt3- Upper Bathonian, Cl – Callovian; environment:

Offshore	**Transition Zone**	**Lower and Middle Shoreface**	**Upper Shoreface**	**Estuary—Bayhead Delta**	**Estuary—Mud flat**	**Carbonate Ramp**	**Fluvial**

Table S2. Chemical composition of carbonates from microprobe analyses.

Borehole	Age	Depth (m)	Type of rocks	Mg %wt	Ca %wt	Mn %wt	Fe %wt	$MgCO_3$ mol%.	$CaCO_3$ mol%	$MnCO_3$ mol%	$FeCO_3$ mol%	Point of analysis and type of carbonate
Gutwin		167.6	sst	0.92	3.99	1.12	41.65	3.2	9.8	2.3	84.7	1 Sdp microsparite
				1.29	4.39	0.82	40.70	4.5	10.8	1.7	83.0	2 Sdp microsparite
				2.48	4.31	0.14	35.52	9.3	11.6	0.3	78.8	3 Sdp microsparite
				3.15	5.42	0.00	36.41	11.0	13.6	0.0	75.4	4 Sdp microsparite
		201.6	sst	1.68	0.49	0.49	40.92	5.9	8.6	1.0	84.5	1 Sdp sparite
				6.40	4.82	0.53	30.99	22.5	12.1	1.1	64.3	2 Pt sparite
				7.07	2.55	0.27	8.35	25.0	56.9	0.6	17.5	3 Ank sparite
	Bj2	207.95	sst	1.44	3.72	0.27	40.60	5.1	9.4	0.5	85.0	1 Sdp sparite
				1.31	3.25	0.00	41.89	4.6	8.2	0.0	87.2	2 Sdp micrite
		220.6	cls	1.13	4.22	0.00	38.37	4.2	11.2	0.0	84.6	1 Sdp microsparite
				2.00	3.87	0.00	35.08	7.8	10.8	0.0	81.4	3 Sdp micrite
				1.31	3.59	0.72	36.93	5.0	9.8	1.7	83.5	4 Sdp micrite
		225.0	sst	1.59	4.43	0.26	40.60	5.4	11.0	0.5	83.1	1 Sdp sph
				1.36	36.09	0.67	1.52	4.8	90.7	1.3	3.2	2 Cal sparite
				0.34	39.42	0.00	0.24	1.2	98.3	0.0	0.5	3 Cal micrite
				0.11	40.15	0.00	0.00	0.4	99.6	0.0	0.0	3a Cal micrite
Justynów PIG 1	Bj2(?)	20.3	cls	1.51	3.01	1.19	40.08	5.4	7.7	2.5	84.4	1 Sdp micrite
				1.84	1.96	1.36	41.64	6.4	4.9	2.8	85.9	2 Sdp micrite
Mniszków IG 1	Bt2	916.9	sst	5.00	1.08	1.51	36.61	17.7	2.6	3.2	76.5	1 Sdp micrite
				7.19	21.41	0.55	9.64	25.2	53.6	1.2	20.0	2 Ak sparite
	Bt2	959.5	cls	2.79	3.16	0.15	39.84	9.7	7.9	0.3	82.1	1 Sdp micrite
				6.46	3.75	0.36	33.20	22.3	9.2	0.7	67.8	2 Pt sparite
				2.53	3.90	0.11	39.55	8.8	9.7	0.2	81.3	3 Sdp sparite
	Bt1	962.0	sst	3.81	1.49	1.57	38.60	13.3	3.7	3.3	79.7	1 Sdp micrite
				6.50	21.07	0.66	11.34	22.7	52.5	1.4	23.4	2 Ank sparite
Mołdawa	Bt1-2	243.5	sst	2.27	7.00	0.37	35.64	7.8	17.3	2.1	72.8	1 Sdp sparite
				5.33	3.93	0.66	33.43	18.8	9.9	1.4	69.9	2 Sdp sparite
				6.50	4.77	0.64	31.40	22.5	11.8	1.3	64.4	3 Sdp sparite
				6.77	21.21	0.64	8.29	24.9	55.7	1.4	18.0	4 Ank sparite
	Bj2(?)	274.1	cls	1.46	3.13	0.04	42.00	5.1	7.8	0.1	87.0	1 Sdp sparite
				1.84	3.04	0.15	40.81	6.5	7.7	0.3	85.5	2 Sdp micrite
				0.53	36.75	0.49	2.64	1.9	91.7	1.0	5.5	3 Cal vein
	Bj2	304.5	cls	2.82	5.90	0.00	36.42	9.9	14.7	0.0	75.4	1 Sdp sparite
		354.3	sst	1.82	4.31	0.06	39.33	6.5	10.9	0.1	82.5	1 Sdp microsparite
				6.00	4.93	0.29	31.84	21.0	12.4	0.6	66.0	2 Sdp microsparite
				5.45	4.72	0.26	33.00	19.1	11.9	0.5	68.5	3 Sdp sparite
				5.86	22.33	0.36	11.57	20.3	55.3	0.7	23.7	4 Ank sparite
Omięcin XI/2	Bj2	36.0	cls	1.39	1.32	0.92	41.59	5.1	3.4	2.0	89.5	1 Sdp microsparite
				0.83	1.92	2.47	35.18	3.4	5.6	6.0	85.0	2 Sdp microsparite
				1.35	1.11	1.28	40.33	5.2	3.0	0.4	91.4	3 Sdp micrite
	Aa1	165.8	sst	2.61	4.67	0.33	38.53	9.0	11.5	0.7	78.8	1 Sdp microsparite
				2.17	3.96	0.21	35.77	8.2	10.8	0.5	80.5	2 Sdp microsparite
				2.47	4.62	0.18	35.19	9.2	12.4	0.4	78.0	3 Sdp microsparite
				2.58	3.99	0.54	35.84	9.6	10.6	1.1	78.7	4 Sdp micrite
				1.41	2.90	0.33	37.76	5.3	8.0	0.8	85.9	5 Sdp micrite
				1.26	3.44	0.40	37.83	4.8	9.3	0.9	85.0	6 Sdp micrite
				2.27	4.38	0.00	33.72	10.5	12.1	0.0	77.4	7 Sdp microsparite
		179.0	sst	1.94	4.09	0.00	37.11	7.2	10.9	0.0	81.9	1 Sdp microsparite
				2.29	4.30	0.00	33.14	9.2	12.3	0.0	78.5	2 Sdp microsparite
				1.35	2.39	0.50	37.64	4.7	17.5	1.0	76.8	3 Sdp sparite
				2.35	3.84	0.00	37.70	8.6	10.0	0.0	81.4	4 Sdp sparite

			2.78	4.42	0.00	37.04	10.0	11.3	0.0	78.7	5 Sdp sparite
Omięcin XI/3		132.2	cls	3.38	3.18	0.39	36.10	12.4	8.3	0.9	78.4	1 Sdp sparite
				5.29	4.05	0.15	30.87	20.0	10.9	0.3	68.8	3 Pt sparite
				3.16	3.12	0.00	33.90	12.4	8.8	0.0	78.8	2 Sdp sparite
				6.09	4.06	1.10	32.43	21.1	10.1	2.3	66.5	2a Pt sparite
				3.13	2.91	0.13	35.36	12.0	7.9	0.3	79.8	3 Sdp sparite
				2.63	3.60	0.10	37.62	9.6	9.3	0.2	80.9	5 Sdp sparite
				2.63	3.47	0.01	39.83	9.2	8.6	0.0	82.2	6a Sdp micrite
				3.47	3.99	0.11	37.12	12.2	10.1	0.2	77.5	7 Sdp microsparite
	Bj2	144.5	cls	8.31	23.77	1.06	7.31	27.5	56.2	2.0	14.3	1 Ank sparite
				7.07	23.11	0.87	7.74	24.7	57.6	1.7	16.0	2 Ank sparite
				7.17	22.78	0.87	6.85	25.6	58.1	1.8	14.5	3 Ank sparite
Omięcin XI/3		144.5	cls	1.72	2.88	0.47	36.49	6.7	8.0	1.1	84.2	5 Sdp sph
				2.08	3.51	0.48	35.31	8.1	9.7	1.1	81.1	6 Sdp sph
	Bj2	172.9	sst	7.13	24.03	1.19	8.33	23.8	57.3	2.4	16.5	1 Ank sparite
				5.89	4.56	0.00	28.06	22.9	12.6	0.0	64.5	2 Pt sparite
				6.39	6.27	0.31	28.47	22.9	16.0	0.7	60.4	3 Pt sparite
				4.41	4.61	0.32	33.15	16.0	12.0	0.7	71.3	4 Sdp sparite
				6.63	25.85	0.77	6.61	22.8	63.5	0.2	13.5	5 Ank sparite
				6.09	23.72	1.29	9.46	20.7	57.6	2.6	19.1	6 Ank sparite
				2.33	4.71	0.94	38.77	8.2	11.5	1.9	78.4	7 Sdp sparite
				5.01	4.82	0.44	32.36	18.0	12.3	1.0	68.7	8 Pt sparite
				4.41	3.42	0.22	34.44	16.1	8.9	0.5	74.5	9 Sdp sparite
	Bj1	203.9	sst	2.91	3.53	0.29	37.73	10.4	9.0	0.6	80.0	1 Sdp sparite
				6.94	22.97	0.28	10.12	23.5	55.6	0.6	20.3	2 Ank sparite
				3.22	3.50	0.00	36.05	11.9	9.2	0.0	78.9	3 Sdp sparite
				2.77	3.47	0.20	36.67	10.5	9.1	0.4	80.2	3a Sdp sparite
				2.86	3.41	0.33	36.55	10.5	9.0	0.7	79.8	4 Sdp sparite
				7.17	22.01	0.44	9.42	25.0	54.7	0.9	19.4	5 Ank sparite
	Aa1	225.0	cls	2.21	2.54	0.00	38.98	8.2	6.7	0.0	85.1	1 Sdp sparite
				1.95	3.21	1.00	39.30	6.9	8.2	2.1	82,8	2 Sdp sparite
	Aa1-J1 (?)	234.0	cls	2.38	3.65	0.00	39.27	8.4	9.2	0.0	82.3	1 Sdp micrite
				2.39	3.94	0.00	37.08	8.8	10.4	0.0	80.8	2 Sdp micrite
				2.04	3.63	0.00	39.25	7.3	9.3	0.0	83.4	3 Sdp sparite
				2.00	3.99	0.00	38.13	7.3	10.4	0.0	82.3	4 Sdp sparite
Wąglany k/ Opoczna		395.2	cls	3.48	3.59	0.00	33.22	13.5	10.0	0.0	76.5	1 Sdp sparite
				3.48	2.22	0.00	36.79	13.0	5.9	0.0	81.3	2 Sdp sparite
				2.59	2.37	0.56	38.84	9.4	6.1	1.2	83.3	3 Sdp micrite
				2.02	3.06	0.73	37.17	7.6	8.2	1.6	82.6	4 Sdp micrite
		400.0	cls	3.94	1.18	0.49	36.78	14.7	3.1	1.1	81.1	1 Sdp sparite
				4.26	1.40	0.57	36.54	15.7	3.6	1.3	79.4	2 Sdp sparite
				5.48	0.30	0.05	35.88	20.3	0.8	0.1	78.8	3 Sdp sparite
				4.11	1.04	0.40	37.18	15.2	2.7	0.9	81.2	4 Sdp micrite
				6.65	2.83	0.24	29.20	25.5	7.8	0.5	66.2	5 Pt sparite
				3.33	1.38	0.23	37.97	12.4	3.7	0.5	83.4	6 Sdp micrite
	Bt1-2	412.4	cls	2.00	4.54	0.00	35.52	7.6	12.4	0.0	80.0	1 Sdp sparite
				2.60	4.40	0.00	35.99	9.6	11.6	0.0	78.8	2 Sdp sparite
				2.08	2.73	0.61	38.79	3.9	7.4	1.4	87.3	3 Sdp sparite
				2.52	4.17	0.06	35.46	9.5	11.2	0.1	79.2	4 Sdp micrite
				2.03	2.40	0.23	37.79	7.8	6.5	0.5	85.2	5 Sdp micrite
		419.2	cls	6.63	17.97	0.55	9.47	26.1	50.5	1.3	22.1	1 Ank sparite
				5.37	3.63	0.17	31.82	20.0	9.7	0.4	69.9	2 Pt sparite
				3.77	2.56	0.63	31.94	15.2	7.3	1.5	76.0	3 Sdp microsparite
	Bj2	465.5	cls	7.02	1.27	0.74	26.85	29.0	3.8	1.7	65.5	1 Pt microsparite
				2.92	1.30	0.53	27.09	14.4	4.5	1.6	79.5	2 Sdp micrite
		597.2	cls	8.68	1.23	0.13	29.51	32.0	3.3	0.3	64.4	1 Pt sparite

				0.22	0.43	1.54	42.66	0.8	1.2	3.4	94.6	2 Sd sparite
				5.21	2.75	0.23	31.95	19.9	7.5	0.5	72.1	3 Sdp sparite
				8.51	1.40	0.29	28.41	32.1	3.8	0.7	63.4	4 Pt sparite
				3.31	1.51	0.21	35.74	12.9	4.2	0.5	82.4	5 Sdp micrite
				1.04	0.98	1.17	41.16	3.9	2.6	2.6	90.9	6 Sdp micrite
	Aa1	600.2	sst	6.10	0.94	0.35	27.72	26.3	2.9	0.9	69.9	1 Pt sparite
				5.17	1.30	0.95	22.95	25.5	4.6	2.8	67.1	1a Pt sparite
				5.14	0.64	0.56	30.55	21.4	1.9	1.4	75.3	2 Sdp microsparite
				5.94	1.15	1.29	27.80	24.0	3.5	3.2	69.3	3 Pt microsparite
		643.8	sst	3.43	1.34	1.83	35.02	13.1	3.6	4.2	79.1	1 Sdp sparite
				0.98	0.14	0.85	40.02	3.9	0.4	2.0	93.7	3 Sdp sparite
				3.74	2.14	1.41	33.36	14.5	5.9	3.3	76.3	2 Sdp sparite
				2.25	0.66	1.06	35.68	9.2	1.9	2.6	86.3	4 Sdp sph
				1.85	0.67	1.54	36.92	7.6	2.8	3.4	86.2	5 Sdp sph
Władysław	Bt1-2	200.5	sst	0.25	35.67	1.95	2.41	0.9	90.0	4.1	5.0	1 Cal sparite
				0.40	36.05	1.48	2.16	1.4	91.0	3.1	4.5	1a Cal sparite
				0.40	38.30	0.21	1.51	1.4	95.1	0.4	3.1	2 Cal sparite
				1.48	4.19	0.73	40.50	5.1	10.4	1.5	83.0	3 Sdp sparite
				5.18	4.25	0.52	33.91	18.1	10.6	1.1	70.2	3a Sdp sparite
	Bj2	311.2	sst	0.84	6.11	0.00	39.35	3.0	15.3	0.0	81.7	1 Sdp sph
				0.34	37.17	0.42	2.22	1.2	93.3	0.8	4.7	2 Cal
Wyszmontów 1	Bt1-2	77.5-	cls	1.53	3.15	0.12	42.00	5.3	7.8	0.3	86.6	1 Sdp microsparite
		-77.6		1.26	4.46	0.00	40.73	4.4	11.2	0.0	84.4	2 Sdp micrite
		80.5	cls	1.51	4.25	0.22	36.32	5.8	11.6	0.5	82.1	1 Sdp sparite
				1.17	3.86	0.00	34.42	4.8	11.4	0.0	83.8	2 Sdp sparite
				1.40	3.27	0.00	38.74	5.2	8.8	0.0	86.0	3 Sdp micrite
				2.71	5.72	0.00	33.64	10.2	15.3	0.0	74.5	4 Sdp micrite
				1.45	3.72	0.00	35.39	5.8	10.6	0.0	83.6	5 Sdp micrite
Wyszmontów PIG 2	Bj2(?)	30.7	cls	1.37	6.34	0.28	37.18	4.9	16.1	0.6	78.4	1 Sdp micrite

Legend as in table S1.

Table S3. Composition of sideritic sandstones (vol. %)*

Borehole	Depth [m]	Age	Siderite	Carbonates	Clay Minerals	Quartz	Feldspars	Micas	Ooids	Intraclast	Bioclast	Pyrite	Organic Matter	Other
Gutwin	124.2	Bt1-2	15.3	0.0	12.7	59.0	2.3	0.0	4.4	3.0	3.3	0.0	0.0	0.0
	165.2	Bt1-2	19.0	27.6 Ank	0.3	48.7	1.4	0.0	0.0	0.0	tr	3.0	0.0	0.0
	167.6	Bj2	41.3	0.0	1.3	54,7	0.3	0.7	1.3	0.0	0.0	0.4	0.0	0.0
	190.9	Bj2	19.7	19.3 Ank	2.3	56.0	1.0	0.0	0.0	1.0	tr	0.7	0.0	tr Zrn
	191.5	Bj2	39.7	0.0	1.7	53.3	0.7	0.0	3.0	0.0	1.3	0.3	0.0	0.0
	201.6	Bj2	28.0	12.7 Ank	0.0	58.7	0.6	0.0	0.0	0.0	tr	0.0	0.0	0.0
	207.95	Bj2	47.3	0.0	0.7	45.7	5.7	0.3	0.0	0,0	tr	0.3	0.0	0.0
	222.2	Bj2	36.0	1.7 Ank	0.7	48.3	0.7	0.0	0.0	0.0	12.3	0.3	0.0	tr Kao
	225.0	Bj2	16.0	25.0 Cal	0.0	56.3	1.3	0.0	0.0	0.0	1.4	0.0	0.0	0.0
	279.9	Bj1	1.0	20.0 Cal	23.9 cl-fe	45.0	1.0	2.4	0.0	0.0	0.0	1.7	0.0	5.0Hm
Mniszków IG 1	915.5	Bt2	2.0	38.0 Ank	2.0	47.0	1.3	0.0	0.0	1.0	8.7	0,0	0.0	0.0
	916.9	Bt2	34.0	14.6 Ank	1.3	40.4	1.0	0.0	0.0	2.3	4.7	1.7	0.0	0.0
	918.6	Bt2	33.0	13.2 Ank	3.7	29.2	0.0	0.7	0.0	1.0	18.5	0.7	0.0	tr Zrn
	919.7	Bt1	10.3	34.0 Ank	1.3	51.7	1.3	0.0	0.0	0.0	0.7	0.7	0.0	0.0
	962.0	Bj2	27.3	14.0 Ank	8.6	47.4	0.0	0.0	1.0	0.0	0.0	0.0	1.4	0.3Kao
	1102.8	Aa2	0.7	0.0	25.7	57.0	1.0	10.0	0.0	0.0	0.0	0.0	3.6	2.0Kao
Mołdawa	109.0	Bt1-2	26.7	0.0	4.7	62.3	1.0	0.0	2.3	0.0	2.0	tr	0.0	1.0Qza L
	113.4	Bt1-2	4.9	22.0 Ank	13.0	44.7	1.0	0.0	1.7	0.0	11.3	0.7	0.0	0.7Gth
	123.6	Bt1-2	0.3	30.0 Ank	9.0	38.7	3.7	0.0	10.	0.0	7.3	0.0	0.3	0.0
	168.7	Bt1-2	13.7	23.7 Ank	7.7	44.3	1.3	0.0	0.0	0.0	9.3	0.0	0.0	0.0
	208.0	Bt1-2	2.7	24.7 Ank	7.3	51.3	0.3	0.3	1.7	0.0	9.7	2.0	0.0	0.0
	216.7	Bt1-2	12,3	0.8 Cal	11.0	69.3	4.0	0.3	0.7	0.0	0.3	0.0	0.3	1.0Qza
	228.7	Bt1-2	37.7	11.3 Ank	0.7	48.3	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	229,6	Bt1-2	25.0	0.0	0.7	69.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3Qza
	243.5	Bt1-2	44.0	3.7 Ank	0.0	51.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	250.75	Bt1-2	24.3	1.7 Ank	3.0	16.3	1.3	0.0	44.7	0.0	8.0	0.0	0.0	0.7L
	281.5	Bj2?	25.0	10.7 Cal	0.4	56.3	0.7	0.0	3.3	0.0	2.0	0.3	0.0	0.6Zrn L
	303.4	Bj2	29.3	0.0	7.0	50.3	1.7	1.3	0.0	1.3	4.3	0.0	3.3	1.5Qza
	308.0	Bj2	29.0	4.3 Cal	0.3	45.7	0.0	0.0	17.0	0.3	1.0	0.7	0.3	1.3L
	321.8	Bj2	36.7	0.3 Cal	4.7	44.3	2.0	0.0	7.3	0.0	2.4	0.0	1.3	1.0L
	347.0	Bj2	40.0	4.7 Cal	0.0	40.3	3.7	0.0	6.7	0.0	0.0	0.0	0.0	4.6L
	352.0	Bj2	20.7	25.0 Ank	0.0	51.7	0.3	0.0	0.3	0.0	0.0	0.3	0.3	1.4Kao

	354.3	Bj2	45.0	3.7 Ank	0.7	40.6	1.0	0.0	0.7	0.0	2.3	0.0	6.0	0.0
	355.8	Bj2	25.0	19.4 Ank	1.3	54.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	369.0	Bj2	10.0	77 Cal	3	7.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0
	373.5	Bj2	10.0	0.0	31.0 cl-fe	49.0	1.0	2.0	0.0	0.0	tr	1.0	6.0	0.0
	387.7	Bj2	34.3	tr	0.3	5.7	0.0	0.3	55.7	0.0	3.7	0.0	0.0	0.0
Omięcin XI/2	57.8	Bj2	29.0	0.0	1.3	35.7	1.3	1.7	0.0	0.0	0.0	31.0	0.0	0.0
	77.9-78.9	Bj2	39.3	0.0	0.0	41.0	0.3	0.0	0.7	3.0	15.4	0.0	0.3	0.0
	97.9-98.9	Bj2	18.0	18.3 Ank	1.4	58.0	1.0	0.3	0.0	0.3	1.7	0.3	0.7	0.0
	105.4	Bj1	30.0	14.7 Cal	5.0	46.7	0.0	0.0	2.0	0.3	1.0	1.0	0.0	0.3 Zrn
	107.0-108.0	Bj1	31.4	0.0	0.3	67.7	0.6	0.0	0.0	0.0	0.0	0.0	0.0	tr Kao
	110.2	Bj1	41.0	0.0	4.6	52.7	0.3	0.0	0.0	0.0	0.0	0.0	0.7	0.7Kao
	115.5	Aa2	30.0	0.0	3.0	61.0	0.7	0.6	0.0	0.0	0.0	4.7	0.0	0.0
	165.8	Aa1-J1(?)	34.0	0.0	0.3	61.4	1.3	0.0	0.0	2.3	0.7	0.0	0.0	0.0
	176.0	Aa1-J1(?)	41.0	0.0	1.0	57.4	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0
	179.0	Aa1-J1(?)	37.3	0.0	1.0	59.4	2.0	0.0	0.0	0.0	0.0	0.3	0.0	tr Zrn
	183.3	Aa1-J1(?)	21.0	0.0	0.4	76.3	2.3	0.0	0.0	tr	0.0	0.0	0.0	0.0
Omięcin XI/3	169.0	Bj2	20.3	0.0	26.7	29.3	0.3	19.0	0.0	0.0	0.0	0.0	4.4	0.0
	172.9	Bj2	24.0	15.0 Ank	2.4	37.3	0.0	0.0	3.0	5.0	13.3	0.0	0.0	0.0
	183.7	Bj2	15.7	23.0 Ank	3.3 cl-fe	41.7	tr	0.0	0.0	0.0	16.3	0.0	0.0	0.0
	202.9	Bj1(?)	19.7	19.7 Ank	3.4	47.3	0.0	0.3	0.3	0.0	9.0	0.0	0.3	0.0
	203.9	Bj1(?)	43.0	4.0 Ank	0.0	33.6	0.7	0.0	0.0	2.7	16.0	0.0	0.0	0.0
	210.2	Aa2	19.0	0.0	22.3 cl-fe	41.0	1.0	11.7	0.0	0.0	0.0	tr	5.0	0.0
Wąglany k/ Opoczna	316.4	Bt1-2	33.0	10.0 Ank	6.5	34.3	0.3	0.3	0.0	0.0	15.3	0.0	0.3	0.0
	455.0	Bj2	33.4	0.0	3.3	59.0	0.0	1.0	0.0	0.0	0.0	0.0	0.3	3.0Kao
	482.7	Bj2	8.3	32.6 Ank	5.0	38.0	0.0	0.7	4.0	3.0	4.7	3.7	0.0	0.0
	493.8	Bj2	15.6	28.3 Ank	6.0	47.8	0.0	1.3	0.0	0.3	0.0	0.0	0.7	0.0
	531.0	Bj2	31.7	10.3 Ank	8.0	43.7	0.0	3.0	0.0	0.0	1.3	0.0	2.0	0.0
	600.2	Aa1	32.7	0.0	1.6	64.7	0.7	0.0	0.0	0.0	0.0	0.0	0,3	0.0
	643.8	Aa1	43.7	0.0	1.4 cl-fe	49.3	0.3	0.0	5.3	0.0	0.0	0.0	0.0	0.0
Władysław	166.8	Bt1-2	1.3	11.0 Cal Ank	12.0	65.3	2.3	0.0	0.0	0.0	5.0	0.7	0.0	1.4Qza Glt
	184.0	Bt1-2	26.3	0.0	0.0	63.7	3.7	0.0	0.0	0.0	0.0	0.0	0.0	6.3Gth Hm
	200.5	Bt1-2	16.3	12.0 Cal	6.3	55.7	0.7	0.0	3.7	0.0	4.7	0.0	0.0	0.6Fe-hy
	308.45	Bj2	19.0	19.4 Cal	1.0	59.0	1,0	0.0	0.0	0.0	0.0	0.3	0.0	0.3Qza
	311.2	Bj2	15.3	22.7 Cal	0.0	61.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3L
	377.4	Bj2	2.0	0.0	36 cl-fe	49.0	1.0	6.0	0.0	0.0	0.0	1.0	5.0	0.0
Wyszmontów	85.0	Bt1-2	30.0	10.4 Cal	9.6	33.6	0.0	0.7	0.0	0.7	14.0	0.0	1.0	0.0

1	91.6	Bj2	25.3	9.7 Cal	10.0	42.3	0.7	0.0	4.0	0.7	4.7	0.0	2.6	0.0
	91.7	Bj2	22.7	13.3 Cal	13.0	30.0	0.0	0.0	16.7	1.3	3.0	0.0	0.0	0.0
Zalesie	191.85	Bt1-2?	23.3	0.0	17.7	43.7	4.0	2.7	0.0	0.0	0.0	0.0	0.0	8.6Hm Qza
Antoniowskie	279.8	Aa2	15.0	0.0	21 cl-fe	48.0	2.0	3.0	0.0	0.0	0.0	1.0	10.0	0.0

Legend as in table S1.

Table S4. Composition of sideritic coquinas (vol. %)*

Borehole	Depth (m)	Age	Bioclasts	Siderite	Other Carbonates	Clay Minerals	Quartz	Ooids	Intra-clast	Pyrite	Organic Matter	Other
Władysław	157.5	Bt1-2	29.8	15.3	26.0 Cal	4.3	15.3	2.3	0.0	0.0	0.0	7.0 L Fs
	194.0	Bt1-2	22.7	19.4	15.7 Ank Cal	6.3	31.3	2.3	0.0	0.0	0.0	2.3 Fs L
Wyszmontów 1	99.3	Bj2	31.3	16.3	23.0 Ank	5.4	5.0	6.7	11.7	0.3	0.3	0.0

Legend as in table S1.

Table S5. Isotopic ratios of carbon and oxygen in carbonate cements (values of $\delta^{18}O_{VSMOW}$ of crystalline water for siderosplesite precipitated in temperature 20 °C).

Borehole	Age	Depth (m)	Type of Rocks	Type of Carbonate	$\delta^{13}C_{VPDB}$ ‰	$\delta^{18}O_{VPDB}$ ‰	$\delta^{18}O_{VSMOW}$ ‰	$\delta^{18}O_{VSMOW}$ H_2O ‰
Gutwin	Bt1-2	124.2	sst	Pt	−1.82	−1.23	29.58	–
	Bt1-2	147.7	cls	Sdp	−15.13	−0.51	30.33	−3.55
		164.15	cls	Sdp	−22.42	−0.46	30.38	−3.50
	Bj2	167.6	sst	Sdp	−24.58	0.60	31.47	−2.41
		191.5	cls	Sdp	−15.15	1.70	32.67	−1.27
		222.2	sst	Sdp	−2.19	3.97	31.50	1.07
		232.7–233.0	cls	Sdp	−4.70	−2.98	27.79	−6.10
Justynów PIG 1	Bj2 (?)	20.3	cls	Sdp	−0.03	0.62	31.50	−2.39
		25.5	cls	Sdp	−7.73	−4.73	25.99	−7.90
Mniszków IG 1	Bt1	958.4	cls	Sdp	−9.61	−0.80	30.03	−3.85
Mołdawa	Bt1-2	146.5	cls	Sdp	−14.90	1.23	32.13	−1.76
	Bj2 (?)	274.1	cls	Sdp	−8.15	−0.97	29.86	−4.03
	Bj2	304.5	cls	Sdp	−3.67	−2.28	28.51	−5.38
	Aa1	451.5	cls	Sdp	−3.93	−3.30	27.46	−6.43
Omięcin XI/2	Bj2	36.0	cls	Sdp	−8.92	−8.87	21.71	−12.17
		44.7	sst	Sdp	−4.34	−0.42	30.42	−3.46
		57.8	sst	Sdp	−6.03	−1.13	29.69	−4.19
	Bj1	110.2	sst	Sdp	−9.66	1.55	32.46	−1.43
	Aa1	176.0	sst	Sdp	−12.19	−0.42	30.43	−3.46
		179.0	sst	Sdp	−10.06	0.09	30.95	−2.93
Omięcin XI/3	Bt1-2	105.4	sst	Sdp	−15.33	1.10	32.00	−1.89
				Cal	−8.25	−5.54	25.15	–
	Bj2	120.3	sst	Sdp	−6.62	0.46	31.34	−2.55
		136.4	sst	Sdp	−7.39	−1.53	29.28	−4.60
		169.0	cls	Sdp	−11.33	−7.80	22.82	−11.07
		200.0	cls	Sdp	−9.68	1.67	32.58	−1.31
	Aa1 (?)	225.0	cls	Sdp	−2.71	0.45	31.32	−2.56
	Aa1-J1 (?)	234.0	cls	Sdp	−4.42	1.87	32.73	−1.10
Wąglany k/Opoczna	Bt1-2	361.2	cls	Sdp	−8.29	−2.53	28.26	−5.64
		395.2	cls	Sdp	−17.68	−3.86	26.88	−7.01
	Bj2	455.0	sst	Sdp	−11.87	−6.23	24.43	−9.45
		501.6	cls	Sdp	−3.92	−3.82	26.92	−6.97
	Aa1	600.2	sst	Sdp	−8.63	−7.84	22.78	−11.11
				Pt	−9.58	−10.45	20.08	–
		643.8	sst	Sdp	−10.83	−8.82	21.77	–
Władysław	Bt1-2	184.0	sst	Sdp	−14.12	−6.23	24.44	−9.45
		184.4	cls	Sdp	−12.89	0.31	31.18	−2.71
	Bt1-2 (?)	296.6	cls	Sdp	−5.81	−0.95	29.88	−4.01
	Aa1	396.3	cls	Sdp	−1.58	0.66	31.54	−2.35
Wyszmontów 1	Bt3-Cl	42.4	sst	Cal	−5.80	−7.33	23.30	–

	Bt1-2	61.65	cls	Syd	−9.88	2.12	33.04	−0.84
		77.5–77.6	cls	Sdp	−4.67	1.63	32.54	−1.35
		77.9	cls	Sdp	−11.31	1.45	32.36	−1.53
		84.5	cls	Sdp	−12.72	1.83	32.74	−1.14
	Bj2	91.6	sst	Sdp	−2.67	1.57	32.48	−1.41
		91.7	sst	Sdp	−3.28	1.76	32.67	−1.21
				Cal	−11.15	−4.45	26.27	–
	Bj2	92.8	cls	Syd	−0.63	2.30	33.23	−0.66
		103.7	sst	Sdp	−10.27	−0.93	29.90	−3.99
		126.3	cls	Sdp	1.51	1.65	32.56	−1.33
		135.1	cls	Sdp	−8.33	−0.01	30.85	−3.04
Wyszmontów PIG 2	Bj2 (?)	30.7	cls	Sdp	−1.66	−0.08	30.78	−3.11
		31.8	cls	Sd	−5.98	0.89	31.78	−2.11
		33.8	cls	Sd	−2.29	−0.75	30.09	−3.80
Zalesie	Bj2	206.2	cls	Sdp	−0.62	1.48	32.39	−1.50
Antoniowskie	Aa2	278.5	sst	Sdp	-12.62	-3.66	27.08	-6.80

Legend as in table S1.