Formation of Authigenic Low-Magnesium Calcite from Sites SS296 and GC53 of the Gulf of Mexico

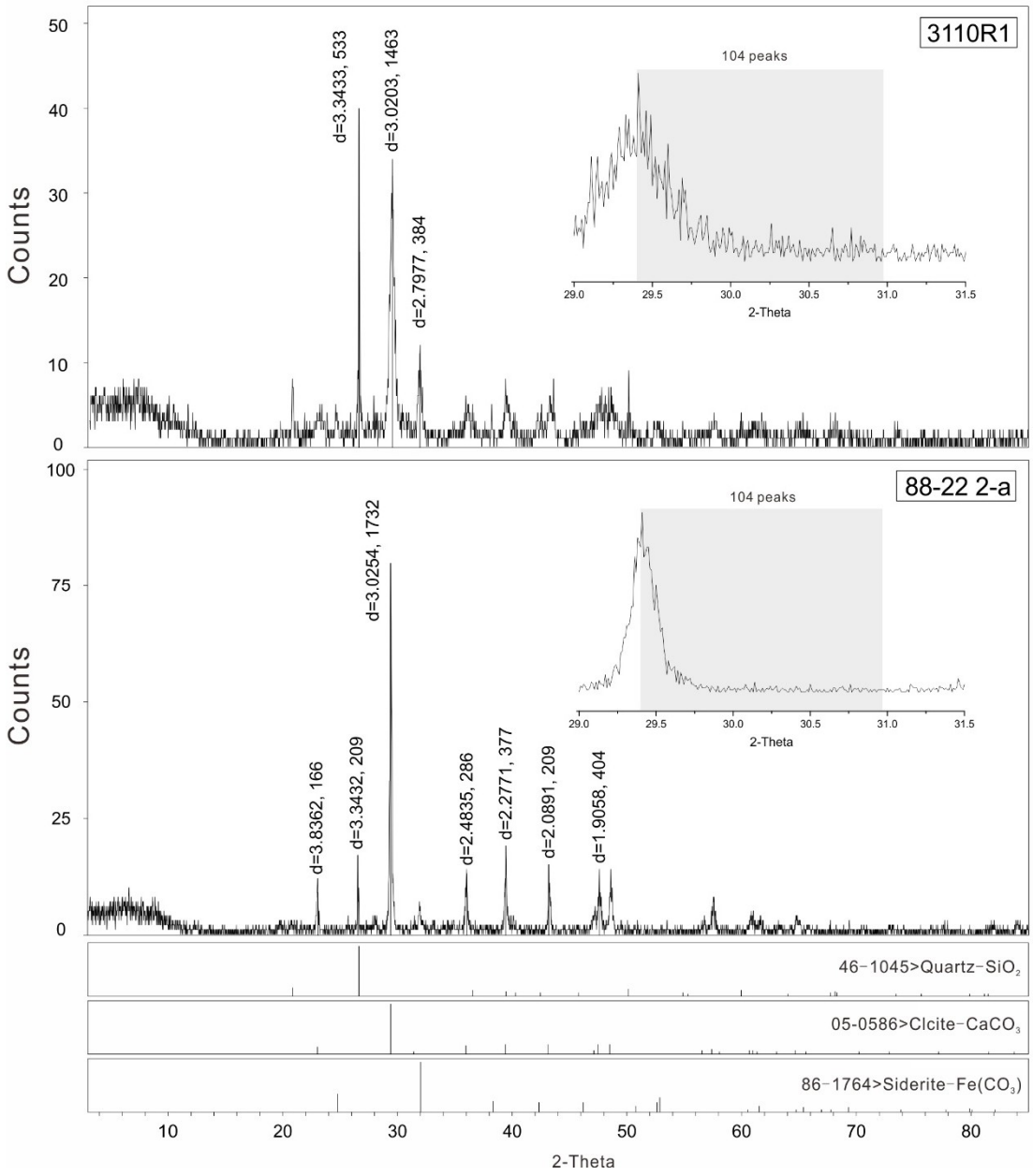

Figure S1. XRD patterns of selected carbonates from the Gulf of Mexico analyzed in this study. Sample 3110R1 from site SS296 and sample 88-22 2-a from site GC53.

Table S1. Carbon, oxygen, and strontium isotopic compositions of authigenic carbonates from sites SS296 and GC53.

Sample	No.	Note	$\delta^{13}C$/‰	$\delta^{18}O$/‰	$^{87}Sr/^{86}Sr$
			SS296		
3110R1	1	matrix	−16.4	1.1	0.709553
	2	matrix	−16.7	0.7	0.709582
	3	matrix	−15.8	1.7	0.709537
	4	matrix	−16.8	0.6	0.709792
	5	matrix	−17.0	1.3	
	6	vein	−17.1	0.2	
3110R2	1	matrix	−15.4	1.6	0.709583
	2	vein	−16.7	−0.3	0.709567
	3	matrix	−16.3	0.5	0.709949
	4	matrix	−17.5	−0.1	
	5	matrix	−16.3	0.3	
	6	matrix	−10.3	7.2	
	7	vein	−10.6	7.4	
	8	matrix	−10.1	6.5	
	9	matrix	−15.1	0.3	
	10	matrix	−17.4	−0.6	
	11	matrix	-16.5	0.3	
3110R3	1	matrix	−10.1	7.5	0.710462
	2	matrix	−9.4	7.2	0.710537
	3	matrix	−10.8	6.5	
	4	vein	−10.4	6.4	
	5	vein	−9.1	6.3	
			GC53		
88-22 2-a	1	matrix	-2.3	−5.7	0.708297
	2	matrix	-1.0	−8.5	0.708103
	3	matrix	-3.3	−6.8	0.708266
	4	matrix	-2.3	−5.7	
89-1 1-a	1	matrix	2.6	−6.8	0.708197
	2	matrix	2.5	−9.4	0.708032
	3	matrix	2.4	−9.4	0.708069
89 D1 S2	1	matrix	0.3	−5.3	0.708451
	2	matrix	0.8	−5.4	0.708498
	3	matrix	1.8	−7.2	
	4	matrix	1.2	−5.9	
	5	vein	2.0	−7.6	
	6	matrix	−0.1	−5.8	
	7	matrix	0.3	−2.5	
	8	matrix	0.5	−6.0	
89 D1 S3	1	matrix	−11.2	−6.9	0.708023
	2	matrix	−9.5	−8.9	0.707938
	3	matrix	−10.8	−9.2	0.707900
	4	vein	−14.4	−9.2	
	5	matrix	−12.8	−8.3	
	6	matrix	−7.8	−7.5	
3112R1	1	matrix	−27.3	2.4	0.709012
	2	matrix	−20.5	−1.7	0.709025
	3	matrix	−40.6	0.2	0.708964
3112R3	1	matrix	−22.3	3.0	0.709179
	2	matrix	−15.8	1.0	0.709201
	3	matrix	−45.3	1.0	

Table S2. Carbon isotopic compositions of organic matter, C and N contents, and C/N ratios of the authigenic carbonates from sites SS296 and GC53.

Sample	No.	$\delta^{13}C_{org}$ (‰)	C (wt%)	N (wt%)	C_{org}/N_{org}
		SS296			
3110R1	1	−25.3	0.32	0.02	16.4
	2	−25.4	0.26	0.02	15.6
	3	−24.0	0.20	0.02	8.6
	4	−23.8	0.19	0.03	7.5
	5	−20.5	0.29	0.03	9.8
	6	−22.8	0.17	0.02	8.7
	7	−24.9	0.24	0.03	9.6
	8	−24.8	0.24	0.02	10.4
	9	−25.6	0.19	0.02	9.4
3110R2	1	−25.4	0.26	0.02	11.2
	2	−23.6	0.25	0.03	9.4
	3	−26.8	0.18	0.02	10.5
	4	−26.4	0.23	0.02	11.0
	5	−26.1	0.27	0.02	12.6
3110R3	1	−26.1	0.36	0.02	16.3
	2	−24.9	0.37	0.03	11.0
	3	−24.6	0.25	0.02	10.6
		GC53			
88-22 2-a	1	−25.3	0.16	0.02	10.0
	2	−24.2	0.11	0.02	6.4
	3	−25.6	0.16	0.01	11.8
89-1 1-a	1	−21.8	0.20	0.03	7.7
	2	−23.8	0.23	0.03	8.8
	3	−24.1	0.22	0.02	9.7
	4	−24.2	0.22	0.02	9.0
	5	−22.7	0.28	0.03	11.3
	6	−23.6	0.25	0.03	8.4
89 D1 S2	1	−26.8	0.18	0.01	12.5
	2	−26.5	0.17	0.01	11.9
	3	−25.3	0.20	0.02	9.7
89 D1 S3	1	−18.9	0.34	0.02	16.2
	2	−19.3	0.28	0.02	16.4
	3	−24.7	0.18	0.02	9.7
	4	−25.3	0.14	0.01	9.6
3112R1	1	−73.7	0.63	0.12	5.0
	2	−63.0	0.30	0.12	2.6
	3	−53.0	0.19	0.16	1.2
	4	−57.7	0.30	0.09	3.2
3112R3	1	−77.2	0.32	0.05	5.9
	2	−64.0	0.29	0.05	6.4
	3	−71.2	0.12	0.02	5.8
	4	−73.9	0.13	0.02	5.5