Supplement of Biogeosciences, 15, 6387–6397, 2018
https://doi.org/10.5194/bg-15-6387-2018-supplement

Biogeosciences Open Access EGU

Supplement of

Macrofaunal burrowing enhances deep-sea carbonate lithification on the Southwest Indian Ridge

Hengchao Xu et al.

Correspondence to: Xiaotong Peng (xtpeng@idsse.ac.cn)

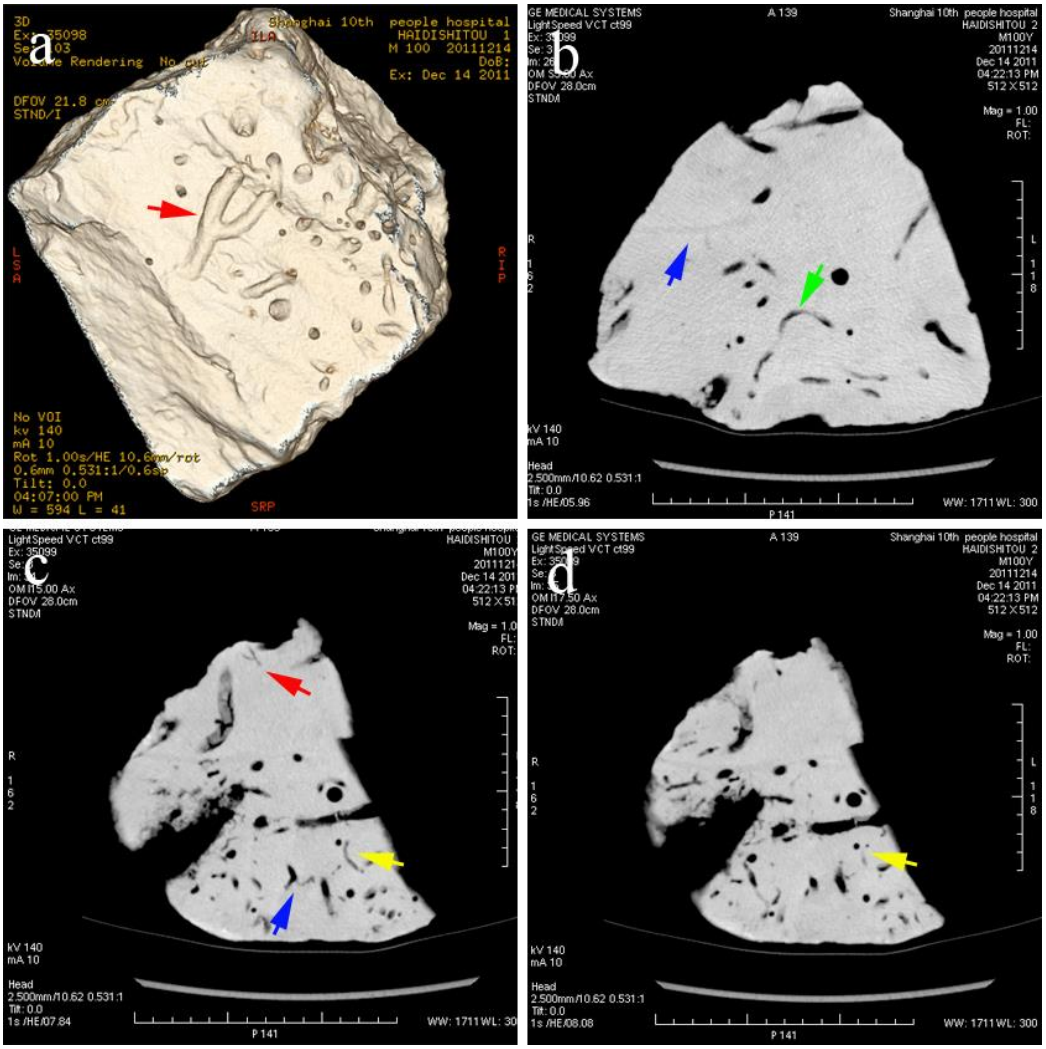

Figure S1 CT images of carbonate samples. b, c and d are different CT scanning slides of same carbonate rock. The slice thickness between c and d is 2.5 mm. Arrows in different colors represent different shape of burrows. Red -- Y-shaped, blue -- branched, yellow -- J-shaped and Green -- U-shaped.

Sample NO.	CaO	SiO_2	Al_2O_3	Na_2O	SO_3	Fe_2O_3	MnO	K_2O	P_2O_5	Cr_2O_3	L.O.I	Total
C1	87.60	5.01	1.60	1.26	1.01	0.99	0.08	0.14	0.12	0.07	2.10	100.00
C2	89.39	4.73	1.54	0.49	1.10	0.91	0.07	0.09	0.12	0.06	1.50	100.00
C3	87.81	5.02	1.64	1.01	0.91	1.08	0.09	0.13	0.14	0.07	2.10	100.00
C4	88.35	4.46	1.53	1.25	1.06	0.88	0.06	0.15	0.11	0.07	2.07	100.00
C5	90.70	4.09	1.04	0.45	0.84	1.09	N.D.	0.12	0.08	0.09	1.50	100.00
C6	90.91	4.42	1.12	0.44	0.61	1.11	0.05	0.16	0.11	0.09	0.99	100.00
C7	90.49	4.37	1.14	0.32	1.21	1.18	0.08	N.D.	0.10	0.07	1.04	100.00
C8	89.33	4.88	1.18	0.40	1.37	1.24	0.06	0.15	0.09	0.06	1.23	100.00
M1	84.31	4.64	1.22	0.50	2.18	3.12	1.57	0.14	0.20	N.D.	1.96	99.83

1

Sample NO.	Li	Be	Sc	V	Cr	Co	Ni	Cu	Zn	Rb	Sr	Y	Zr	Nb
C1	12.394	0.151	1.327	9.067	6.101	7.499	16.927	16.284	8.453	2.272	1415.280	7.398	5.971	0.774
C2	14.326	0.030	1.541	9.584	6.823	8.314	14.787	22.730	12.296	1.971	1570.712	7.794	6.433	0.710
C3	9.924	0.060	1.452	10.544	7.200	16.402	13.308	14.540	6.429	2.073	1408.932	8.692	6.449	0.841
C4	5.187	0.070	1.229	8.446	5.837	5.697	10.295	13.203	8.925	3.008	1355.301	6.697	4.917	0.650
C5	9.269	0.050	1.427	6.355	4.520	3.033	9.568	27.786	10.845	2.794	1105.468	12.841	6.884	0.549
C6	7.282	0.150	1.307	6.643	4.289	3.621	8.299	15.830	9.795	3.092	1071.291	9.646	6.613	0.579

C7	6.185	0.150	1.556	7.123	4.938	6.265	23.184	12.959	15.942	2.823	1071.415	11.043	6.335	0.579
C8	8.970	0.160	1.804	8.559	5.833	8.389	22.501	16.538	11.005	3.067	1210.755	17.159	8.369	0.842
M1	17.389	0.270	2.805	76.871	7.806	432.418	111.399	29.926	38.920	4.272	1389.487	32.831	21.581	3.863

2

Sample NO.	**Mo**	**In**	**Cs**	**Ba**	**La**	**Ce**	**Pr**	**Nd**	**Sm**	**Eu**	**Gd**	**Tb**	**Dy**	**Ho**	**Er**
C1	0.342	0.010	0.101	161.531	4.724	5.981	0.965	4.342	0.824	0.231	1.076	0.151	0.955	0.221	0.613
C2	0.340	0.000	0.110	157.972	4.802	6.363	0.990	4.482	0.950	0.250	1.020	0.160	1.010	0.220	0.620
C3	0.391	0.010	0.100	171.936	5.397	7.801	1.122	4.867	0.921	0.270	1.182	0.170	1.081	0.250	0.751
C4	0.220	0.010	0.180	131.332	4.188	4.987	0.870	3.528	0.730	0.210	0.880	0.120	0.880	0.190	0.570
C5	0.150	0.010	0.180	14.327	5.757	4.879	1.137	4.879	0.978	0.259	1.167	0.190	1.267	0.319	0.938
C6	0.160	0.010	0.180	13.665	4.818	4.768	1.017	4.269	0.888	0.219	1.077	0.160	1.057	0.229	0.728
C7	0.319	0.010	0.140	19.573	5.357	5.367	1.067	4.599	0.978	0.209	1.227	0.170	1.197	0.279	0.838
C8	0.261	0.010	0.110	18.141	7.497	6.344	1.413	6.254	1.213	0.321	1.674	0.251	1.724	0.421	1.293
M1	6.498	0.020	0.150	69.355	23.288	82.052	4.831	21.082	4.342	1.058	5.500	0.789	4.991	1.098	3.204

3

4

Sample NO.	**Tm**	**Yb**	**Lu**	**Hf**	**Ta**	**Tl**	**Pb**	**Th**	**U**	**ΣREE**	**LREE**	**HREE**	**LREE/HREE**	**δEu**	**δCe**	**Ce_{anom}**
C1	0.090	0.573	0.080	0.181	0.161	0.020	3.699	0.684	0.251	20.83	17.07	3.76	4.54	0.75	0.63	-0.20
C2	0.090	0.560	0.090	0.220	0.180	0.050	4.142	0.730	0.260	21.61	17.84	3.77	4.73	0.77	0.65	-0.18

C3	0.100	0.721	0.100	0.230	0.140	0.020	2.283	0.801	0.240	24.73	20.38	4.36	4.68	0.79	0.71	-0.15
C4	0.070	0.530	0.080	0.170	0.130	0.020	0.300	0.590	0.210	17.83	14.51	3.32	4.37	0.80	0.59	-0.23
C5	0.140	0.948	0.150	0.210	0.110	0.010	0.708	0.529	0.249	23.01	17.89	5.12	3.50	0.74	0.43	-0.37
C6	0.110	0.648	0.110	0.190	0.140	0.010	0.608	0.549	0.269	20.10	15.98	4.12	3.88	0.69	0.48	-0.31
C7	0.120	0.778	0.130	0.209	0.100	0.010	1.905	0.549	0.259	22.32	17.58	4.74	3.71	0.58	0.50	-0.30
C8	0.190	1.243	0.200	0.281	0.120	0.020	2.486	0.712	0.271	30.04	23.04	7.00	3.29	0.69	0.43	-0.37
M1	0.429	2.865	0.429	0.669	0.180	0.200	60.850	4.003	0.858	155.96	136.65	19.31	7.08	0.66	1.74	0.24

$\delta Eu=(Eu)_N/0.5(Sm+Nd)_N$

$\delta Ce=(Ce)_N/0.5(La+Pr)_N$

$Ce_{anom}= \log(Ce/ Ce^*)_{SN}= \log [2Ce_{SN} / (La_{SN} + Pr_{SN})]$

Table S1 Geochemical character parameters of Carbonate rocks. C1-C4 represent the gray sediment infilled in the burrows, C5-C8 represent the white carbonate and M1 represent the thin black ferromanganese crusts, some white part may be mix unavoidable.