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Supplementary materials

Strong coupling between biomineral morphology and Sr/Ca of *Arctica islandica* (Bivalvia) — Implications for shell Sr/Ca-based temperature estimates

Cornélia Brosset, Nils Höche, Kotaro Shirai, Kozue Nishida, Regina Mertz-Kraus and Bernd R. Schöne

Table S1. Quality control data for ^{88}Sr LA-ICP-MS measurements conducted on shells of *Arctica islandica*. NIST SRM 610 was used to calibrate the ^{88}Sr concentrations of the shells. For each quality control material (QCM), the strontium-specific relative standard deviation (RSD%) from their respective preferred literature value ([71,72]) was calculated. conc. = concentration

Average calibrated ^{88}Sr conc. (µg/g)	Average detection limit ^{88}Sr (µg/g)	QCM	Average ^{88}Sr conc. (µg/g)	Literature ^{88}Sr conc. (µg/g)	RSD %
515.60 ± 0.06	0.01 ± 0.01	NIST SRM 612	79.33 ± 0.21	78.4 ± 0.2	3.45
		BCR-2G	339.51 ± 0.93	342 ± 4	3.40
		MACS-3	7035.68 ± 111.72	6640 ± 170	3.61
		JCp-1	7221.04 ± 90.42	6890 ± 330	3.56
		JCt-1	1428.09 ± 28.08	1410 ± 50	3.47

Table S2. Sr/Ca ratios (mmol/mol) of laser spots covering annual growth lines from the three specimens of *Arctica islandica* examined in this study. HOM = homogeneous microstructure, CA = crossed-acicular microstructure.

Specimen	Transect	Calendar year of growth line formation	Sr/Ca from annual growth lines (mmol/mol)
A201L	HOM	2003	1.98
		2004	2.34
		2005	1.99
	CA	2003	1.39
		2004	1.11
		2005	1.22
A202L	HOM	2003	2.21
		2004	1.84
		2005	1.76
	CA	2003	1.17
		2004	1.33
		2005	1.13
A203L	HOM	2004	1.75
		2005	1.81
	CA	2004	1.15
		2005	1.23