APPENDIX I. Petrographic property characteristics and carbon and oxygen isotope values of Permian brachiopod shells from West Spitsbergen.

<table>
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<th>MATERIAL</th>
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<th>δ¹⁸O</th>
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1. F = Kapp Starostin; TR = Treskelodd; H = Hynnefjellet; P = Polakkfjellet; A = Ahlstrandodd; V = Vindodd.
2. Number after dash represents the number of the sample area (field of view). "a", "b", etc. distinguish samples from the same field of view.
3. SILICN. = silicification.
4. MS = microstructure; p = prismatic, f = fibrous, cf = coarsely fibrous, gf = granular fibrous.
5. L.C. = luminescence character; NL = nonluminescent, SL = slightly luminescent, L = luminescent, SNL = slightly nonluminescent.
APPENDIX II. Minor and trace element contents (in ppm) of three brachiopod shells from West Spitsbergen.

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**Spiriferella, TR2 (WST146)**

<p>| 2.1 | 1 | p | NL | 300 | 4020 | 220 | bld | 690 | 450 | 388550 | 850 | 3810 |
| 2.1 | 2 | p | NL | 440 | 6570 | 340 | bld | 670 | 400 | 386560 | 770 | 3700 |
| 2.1 | 3 | p | NL | 300 | 3200 | bld | bld | 310 | 390 | 390920 | 710 | 3430 |
| 2.1 | 4 | p | NL | 110 | 1430 | bld | bld | 350 | 310 | 393840 | 940 | 3220 |
| 2.1 | 5 | p | NL | 320 | 4370 | bld | bld | 350 | 280 | 390380 | 900 | 3620 |
| 2.1 | 6 | p | NL | bld | 1020 | bld | bld | 370 | 360 | 392940 | 940 | 3640 |
| 2.1 | 7 | p | NL | 200 | 2490 | bld | bld | 320 | 380 | 393230 | 830 | 2180 |
| 2.1 | 8 | p | NL | 8670 | 630 | 260 | bld | 1280 | 7330 | 380890 | 810 | 4950 |
| 2.1 | 9 | p | NL | bld | 420 | bld | 270 | 400 | 396010 | 930 | 3940 |
| 2.1 | 10 | p | NL | 150 | 350 | bld | bld | 550 | 550 | 393880 | 990 | 4280 |
| 2.2 | 10 | p | NL | bld | 160 | bld | bld | 590 | 760 | 395820 | 800 | 2730 |
| 2.2 | 9  | p | NL | 120 | 270 | bld | bld | 1370 | 590 | 390610 | 830 | 5070 |
| 2.2 | 8  | p | NL | bld | 300 | bld | bld | 840 | 630 | 394930 | 1100 | 4470 |
| 2.2 | 7  | p | NL | bld | 930 | bld | bld | 1350 | 820 | 389900 | 1160 | 4150 |
| 2.2 | 6  | p | NL | 110 | 1140 | bld | bld | 580 | 620 | 394130 | 830 | 4150 |
| 2.2 | 5  | p | NL | 100 | 530 | bld | bld | 660 | 470 | 394560 | 1050 | 5130 |
| 2.2 | 4  | p | NL | bld | 1520 | bld | bld | 500 | 340 | 394350 | 1070 | 4050 |
| 2.2 | 3  | p | NL | 100 | 1680 | bld | bld | 580 | 600 | 394500 | 1000 | 3830 |
| 2.2 | 2  | p | NL | 170 | 2970 | bld | bld | 360 | 350 | 390270 | 960 | 4000 |
| 2.2 | 1  | p | NL | 230 | 10030 | bld | bld | 490 | 270 | 386010 | 930 | 4580 |
| 2.3 | 1  | p | NL | bld | 880 | bld | bld | 470 | 560 | 395120 | 740 | 4250 |
| 2.3 | 2  | p | NL | 140 | 1510 | bld | bld | 1230 | 640 | 391670 | 810 | 5140 |
| 2.3 | 3  | p | NL | 110 | 640 | bld | bld | 500 | 460 | 395800 | 1010 | 4390 |
| 2.3 | 4  | p | NL | bld | 1060 | bld | bld | 510 | 300 | 394480 | 1270 | 4160 |
| 2.3 | 5  | p | NL | bld | 910 | bld | bld | 460 | 440 | 396190 | 1060 | 4170 |
| 2.3 | 6  | p | n/a | bld | 500 | bld | bld | 600 | 310 | 396780 | 1010 | 4030 |
| 2.3 | 7  | p | n/a | bld | 850 | bld | bld | 660 | 430 | 393610 | 1190 | 4500 |
| 2.3 | 8  | p | n/a | bld | 500 | bld | bld | 1280 | 1000 | 389450 | 980 | 5730 |
| 2.3 | 9  | p | n/a | bld | 440 | bld | bld | 850 | 800 | 395330 | 730 | 2720 |
| 2.3 | 10 | p | n/a | bld | 420 | bld | bld | 740 | 760 | 396360 | 670 | 3170 |
| 1.1 | 1  | f | NL | 110 | 230 | bld | bld | 630 | 930 | 394920 | 680 | 1950 |
| 1.1 | 2  | f | NL | 280 | bld | bld | 790 | 920 | 395500 | 800 | 1720 |
| 1.1 | 3  | f, Si | NL | 16160 | 100 | bld | bld | 490 | 880 | 383440 | 920 | 1670 |
| 1.1 | 4  | f, Si | NL | 21950 | 620 | bld | bld | 1110 | 910 | 375310 | 520 | 1450 |
| 1.1 | 5  | f | NL | 140 | 240 | bld | bld | 1410 | 1010 | 390990 | 600 | 1540 |
| 1.1 | 6  | f | NL | bld | 660 | bld | bld | 1450 | 860 | 387960 | 860 | 1010 |
| 1.1 | 7  | Si | Si | 386040 | 200 | bld | bld | 200 | 110 | 55610 | bld | 110 |
| 1.1 | 8  | Si | Si | 320360 | 430 | 520 | bld | 290 | 200 | 123320 | bld | 160 |
| 1.1 | 9  | Si | Si | 416930 | 890 | 380 | bld | 370 | bld | 20060 | bld | bld |
| 1.1 | 10 | Si | Si | 436090 | 110 | bld | bld | 130 | bld | 310 | bld | bld |
| 1.2 | 1  | f | DL | bld | 220 | bld | bld | 1250 | 860 | 391440 | 810 | 3850 |
| 1.2 | 2  | f | NL | bld | 150 | bld | bld | 720 | 820 | 394120 | 920 | 4350 |
| 1.2 | 3  | f | NL | bld | 240 | bld | bld | 1330 | 960 | 391990 | 630 | 3780 |
| 1.2 | 4  | f | NL | bld | 220 | bld | bld | 1580 | 1010 | 390800 | 800 | 3150 |
| 1.2 | 5  | f | L | bld | 230 | bld | bld | 1200 | 730 | 390830 | 830 | 4430 |
| 1.2 | 6  | f | L | bld | 270 | bld | bld | 860 | 730 | 392460 | 810 | 4150 |
| 1.2 | 7  | f | L | bld | 270 | bld | bld | 1670 | 790 | 387260 | 780 | 3780 |
| 1.2 | 8  | f | L | bld | 200 | bld | bld | 680 | 590 | 392560 | 790 | 3910 |
| 1.2 | 9  | Si | Si | 424870 | 230 | bld | bld | 120 | bld | 12910 | bld | 110 |
| 1.2 | 10 | Si | Si | 428940 | 400 | bld | bld | 110 | bld | 7210 | bld | bld |
| 2.4 | 1  | p | NL | 410 | 4370 | 350 | bld | 480 | 420 | 389980 | 880 | 3310 |
| 2.4 | 2  | p | NL | 880 | 5280 | 190 | bld | 340 | 370 | 388940 | 710 | 3190 |
| 2.4 | 3  | p | NL | 120 | 1800 | bld | bld | 360 | 320 | 395110 | 920 | 3500 |
| 2.4 | 4  | p | NL | 200 | 1780 | bld | bld | 340 | 290 | 394990 | 930 | 3270 |
| 2.4 | 5  | p | NL | bld | 870 | bld | bld | 430 | 310 | 395840 | 970 | 3300 |
| 2.4 | 6  | p | NL | bld | 580 | bld | bld | 440 | 330 | 397220 | 1040 | 4330 |
| 2.5 | 1  | p | NL | bld | 640 | bld | bld | 670 | 400 | 395890 | 980 | 4150 |
| 2.5 | 2  | p | NL | bld | 1090 | bld | bld | 530 | 280 | 395310 | 910 | 3980 |
| 2.5 | 3  | p | NL | bld | 940 | bld | bld | 700 | 630 | 393650 | 980 | 4560 |</p>
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Each transect starts from the exterior margin and ends at the interior margin (point 1 to 10). WST146-2-4 and WST146-2-5 transects circle around the sampled sites, WST146-2-1 and WST146-2-2, respectively, for isotopic analyses. Si = spots have Si content higher than 32% of carbonate by weight. MS = microstructure; p = prismatic, f = fibrous, dMC = diagenetic Mg calcite; L.C. = luminescence character: NL = nonluminescent, DL = dull luminescent, L = luminescent. bld = below the limit of detection. The detection limits for Si, Al, Fe, Mn, Na, Mg, Ca, Sr, and S are 100, 90, 190, 190, 70, 50, 220, 310, and 80 ppm, respectively.