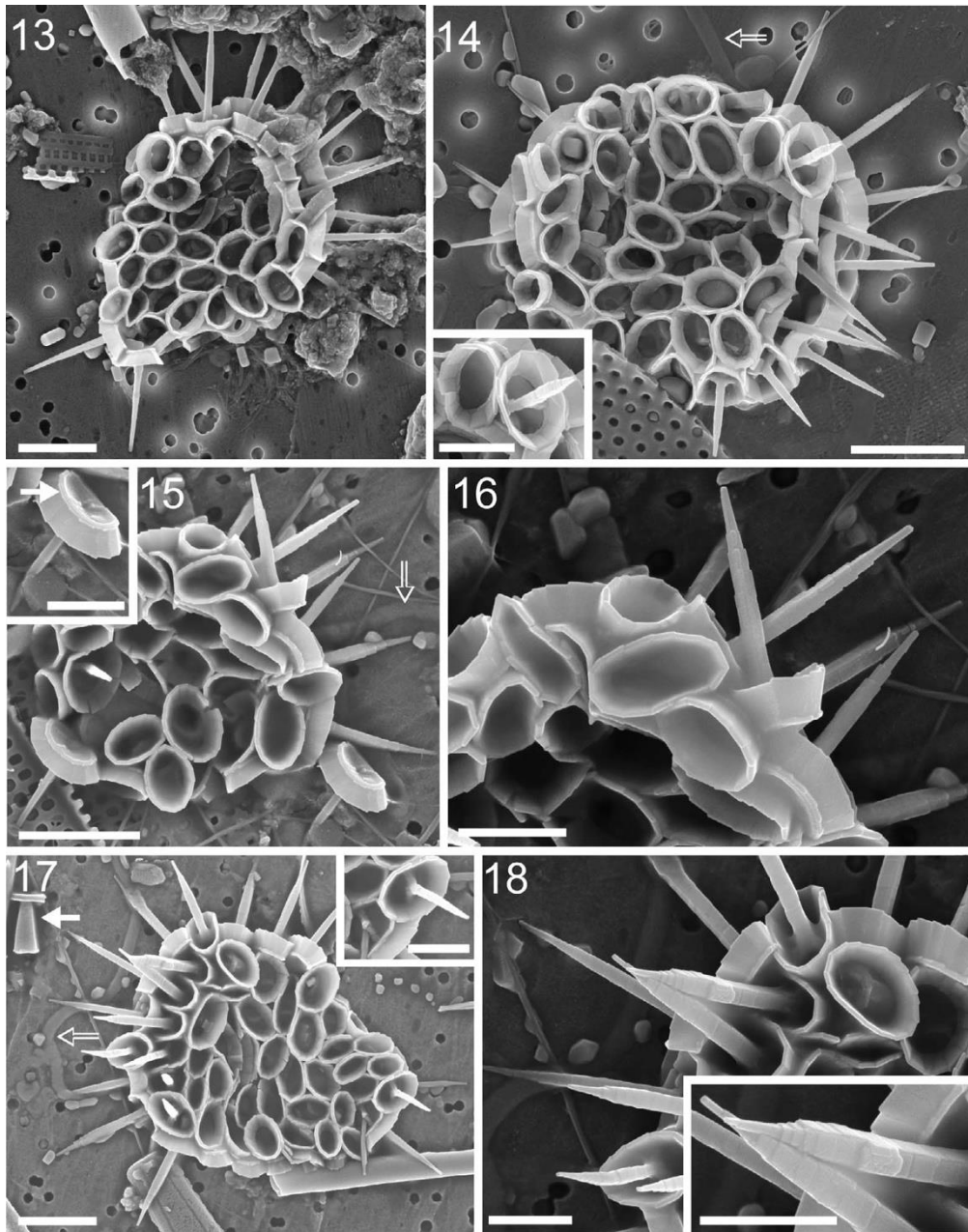


Vexillarius cereus Andruleit & Jordan (2017)



Figs 13–18

Figs 13–18. Scanning electron micrographs of *Vexillarius cereus* sp. nov.

Fig. 13. Collapsed coccosphere (GeoB 10044-2, 103 m).

Fig. 14. Collapsed coccosphere (GeoB 10051-2, 68 m). Open arrow indicates flagellumlike structure. Holotype.

Inset showing the bar supporting the quadrangular appendage and the V units at the base of the coccolith wall.

Figs 15, 16. Collapsed coccosphere (GeoB 10049-2, 56 m).

Fig. 15. Open arrow indicates flagellumlike structure. Closed arrow shows the V units at the base of the coccolith wall (inset).

Fig. 16. Close-up of coccoliths.

Figs 17, 18. Collapsed coccosphere (GeoB 10049-2, 101 m).

Fig. 17. Open arrow indicates flagellumlike structure, closed arrow a loose coccolith of *Turrilithus latericioides*.

Paratype. Inset showing the bar supporting the quadrangular appendage.

Fig. 18. Close-up of coccoliths, particularly the elements forming the distal end of the appendage^{1/4} (inset). Scale bars 2 μm (Figs 13–15, 17) or 1 μm (Figs 15 inset, 16, 17 inset, 18, 18 inset).

Diagnosis: Coccosphere shape unknown, collapsed specimens spherical–subspherical in outline, 5.7–7.2 μm in diameter (excluding appendages). Coccosphere dimorphic, monothecate, bearing 50–60 ordinary (body) coccoliths and 19–21 tubular coccoliths. Body coccoliths elliptical, 0.6–1.0 μm \times 0.8–1.5 μm , and 0.3–0.6 μm in height, flaring outer wall elements (R units), and inner cycle of much shorter wall elements (V units). Central area apparently open. Tubular coccoliths identical to body coccoliths, but with central bar across short axis, supporting distally tapering quadrangular appendage, 1.5–2.6 μm long. Appendage wall comprising single row of brick-like elements, distally diminishing in size (from 0.2–0.4 μm to 0.1 μm in width), with tip composed of two back-to-back elongate elements (about 0.5 μm long).

Holotype: BGR SEM stub no. 4374. Specimen shown in Fig. 14. Film no. 6995.

Type Locality: Eastern Indian Ocean (GeoB 10051-2, 68 m).

Paratype: BGR SEM stub no. 4370. Specimen shown in Fig. 17 (eastern Indian Ocean, GeoB 10049-2, 101 m). Film no. 9286.

Distribution: Only encountered off the coast of Java.

Etymology: *cereus* (Latin) wax taper. In reference to the shape (tapering^{1/4} four-sided cone) of the appendages of the tubular coccoliths.

Remarks: As in *Vexillarius iaculifer* (see Figs 1, 3, 5), there appears to be a flagellumlike structure (open arrows in Figs 14, 15, and 17) associated with the coccospheres in proximity to the tubular coccoliths. If these structures are truly flagella, then it would provide strong evidence that the tubular coccoliths are circumflagellar coccoliths. However, specimens often collapse with a few tubular coccoliths at the opposite pole (and not associated with a flagellumlike structure), an arrangement reminiscent of *Acanthoica* Lohmann, which possesses both apical and antapical spine-bearing coccoliths. Recently, a new genus and species was described from Arctic waters as *Porsildia acerviphora* Thomsen & Østergaard (2015). This species closely resembles *Vexillarius cereus*, but differs in possessing a central area structure of piled elements, which are not connected to the wall. The two species are compared in Table 3, and although their dimensions are nearly identical, they are considered here to be distinct entities. Since *P. acerviphora* exhibits all the characteristics of *Vexillarius*, we transfer it to the genus as *Vexillarius acerviphora* (Thomsen & Østergaard) *comb. nov.* (basonym: *P. acerviphora* Thomsen & Østergaard, 2015, p.166, figs. 36-41), and treat *Porsildia* as a junior synonym of *Vexillarius*.

Andruleit, H. & Jordan, R.W., 2017. Two new species of *Vexillarius* (Prymnesiophyceae) from the eastern Indian Ocean. *Phycologia*, **56(5)**: 510–516.