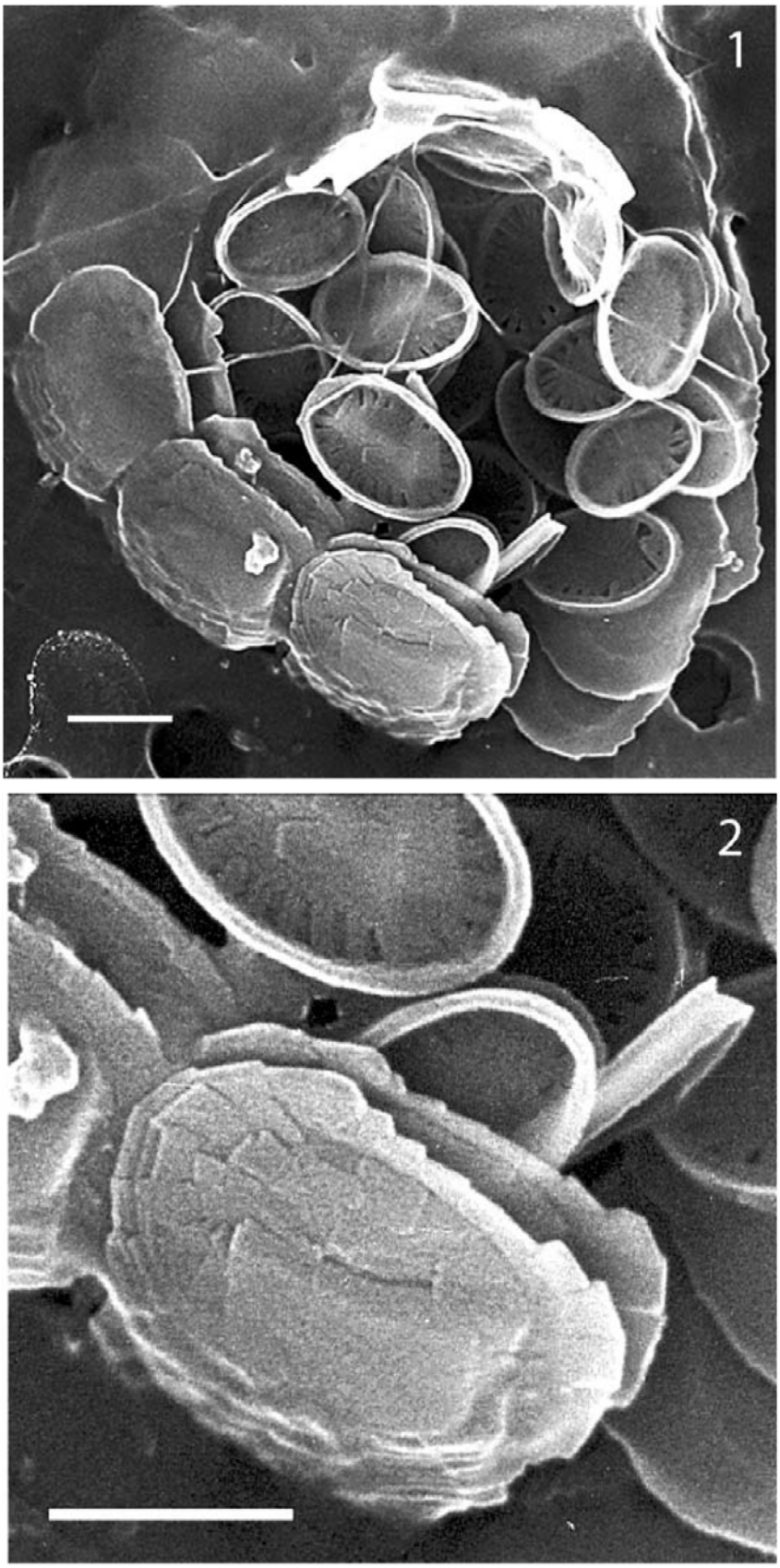
81. Syracosphaera reniformis Kleijne & Cros (2009)



Pl. 8, figs 1-2

Pl. 8. *Syracosphaera reniformis* Kleijne et Cros sp. nov. Scale bars = 1 μm. Figure 1 was published previously in Kleijne (1993), as *Syracosphaera* sp. type J.

Fig. 1. Holotype; collapsed dithecate coccosphere showing body coccoliths, overlapping exothecal planoliths in proximal (lower right) and distal views; APNAPI/T86-12R/87m.

Fig. 2. Detailed view of fig. 1; body coccoliths with low wall, large smooth central structure and narrow triangular openings between short radial laths; exothecal planoliths in lateral-distal view, showing pattern of superposed layers of decreasing size.

Syracosphaera nana auct. non (Kamptner 1941), OKADA and MCINTYRE 1977 partim, pp. 24-25, pl. 8, figs. 7, 8, non fig. 9.

?Florisphaera sp. R, REID 1980, p.168, pl. 8, figs. 6-7.

Syracosphaera cf. *nana*, HEIMDAL and GAARDER 1981, p. 60, pl. 8, figs. 42a, b.

Syracosphaera sp. type J, KLEIJNE 1993, p. 244, pl. 5, fig. 3.

Syracosphaera sp. type J of Kleijne 1993. – YOUNG et al. 2003, p. 40, pl. 17, figs. 11, 13, ?figs. 10, 12. – YOUNG et al. 2009, fig. 6c-d.

Diagnosis: Coccosphaera globosa, dithecata, cum coccolithis endothecalibus dimorphis. Coccolithi exothecales sunt planolithi longi, lamellati, incrassati asymmetrice, cum ordinatione superpositorum stratorum magnitudinis decrescentis in uno latere. Coccolithi comunes sunt murolithi late elliptici cum muro humili, augenti. Area centralis formatum structura magna et levis cum orbe peripherali elementorum lamellarum brevium radialier tendentibus cum parvis orificiis in medio. Coccolithi circumflagelares sunt murolithi cum spina acuta.

Coccosphere spherical, dithecate, with dimorphic endothecal coccoliths. Exothecal coccoliths are large, laminated, asymmetrically thickened planoliths, with a pattern of superposed layers of decreasing size on one side. Body coccoliths are broadly-elliptical muroliths with a low, flaring wall. The central area is a large, smooth central structure with a peripheral cycle of short radial laths with very small openings in between. Circum-flagellar coccoliths are muroliths with a pointed spine.

Holotype: Negative A81/43 (pl. 8, fig. 1), deposited at the Nationaal Herbarium Nederland, Universiteit Leiden branch (L).

Type locality: North Atlantic (34°19'2"N 34°21'3"W), depth 87m, 31 Aug. 1986 (Cruise APNAP-I, Station T86-12R).

Etymology: Latin *reniformis -e* (adjective), kidney-shaped; referring to the kidney-shaped outline of the exothecal coccoliths without the large wing-like extension, as it is visible in pl. 8, fig. 2.

Number of specimens studied: 1, plus 1 in Okada and McIntyre (1977), 2 in Heimdal and Gaarder (1981) and 2 in Young et al. (2003; 2009).

Distribution: Pacific; Mediterranean Sea, 37-38m; North Atlantic, 87m.

Description: The dithecate coccosphere consists of up to ± 50 large laminated exothecal planoliths and ± 35 dimorphic endothecal muroliths with a characteristic large, smooth and flat centre, and small peripheral openings in between the radial laths (pl. 8, figs. 1-2). The planoliths are considerably larger than the endothecal coccoliths.

The exothecal coccoliths are solid, asymmetrically thickened discs, with a flat, smooth proximal side, on which two different parts can be distinguished: an elliptical central area is surrounded by a highly asymmetrical rim (pl. 8, fig. 1, lower right). The rim bears a large square-built extension (Young et al. 2009, fig. 6c). The distal side shows a stepped pattern of elements with a complex structure: they grow backwards over the central area and cover approximately half of it. The elements that form the widest rim extensions extend back higher and further than elements that form the narrower part of the rim. The outer margin of the wider part of the rim is not continuous with the narrow rim part, which gives the planolith a more or less kidney-shaped outline. The uppermost outline of the planolith consists of large elements with a flat surface and a large step near the narrow part of the rim (pl. 8, fig. 2), where the planoliths overlap to form a ribbon, see also Young et al. (2009)

The body coccoliths have a single-layered wall and are variable in size. The slightly convex central area shows a large, smooth central part, surrounded by a radial cycle of short laths with very small openings in between (pl. 8, fig. 1; see also Okada and McIntyre 1977, pl. 8, figs. 7-8).

Spine-bearing circum-flagellar coccoliths are visible in the coccospheres shown by Heimdal and Gaarder (1980, figs. 42a, b). The structure that is visible in the centre of the holotype possibly is the rounded top of a spine (pl. 8, fig. 1).

Dimensions: coccosphere diameter ± 6-8 μm; exothecal coccoliths, length ± 2.2 μm; body coccoliths, length 1.4-1.8 μm, width 1.0-1.2 μm; circum-flagellar coccoliths, spine length up to 1.2 μm (Heimdal and Gaarder, 1981).

Taxonomic notes: *Syracosphaera reniformis* sp. nov. is placed in the *squamosa*-subgroup, because of its laminated exothecal coccoliths. The body coccoliths have a very characteristic broad smooth central area, with a peripheral cycle of triangular openings that are hardly visible (pl. 8, figs. 1-2). Similar specimens have been shown previously by Okada and McIntyre (1977, pl.8, figs.7-8), although misidentified as *S. nana,* and by Heimdal and Gaarder (1981, pl.8, figs.42a, b) as *S.* cf. *nana*. Unlike the large and smooth central part that is found in *S. reniformis* sp. nov., body coccoliths of *S. nana* have an elongate, narrow central structure in the form of a whale-back (pl. 11, figs. 1-2, 4).

Another species bearing large stratified planoliths and body muroliths with a large and broad central structure and no distal flange is *S. operculata* sp. nov. However, that species has subcircular exothecal coccoliths and body coccoliths with a double-layered wall, whereas in *S. reniformis* sp. nov. the planoliths consist of a more or less kidney-shaped part with a wide extension on one side, while the body coccolith wall is single-layered.

The specimen figured in Young et al. (2003) in pl. 17, figs. 10 and 12, could not be identified with certainty as belonging to this new species. This collapsed coccosphere consists of endothecal coccoliths of *S. reniformis* sp. nov., that are, on the contrary, surrounded by exothecal coccoliths that look more like those of *S. operculata* sp. nov.

Kleijne, A. & Cros, L., 2009. Ten new extant species of the coccolithophore *Syracosphaera* and a revised classification scheme for the genus. *Micropaleontology,* **55(5):** 425-462.