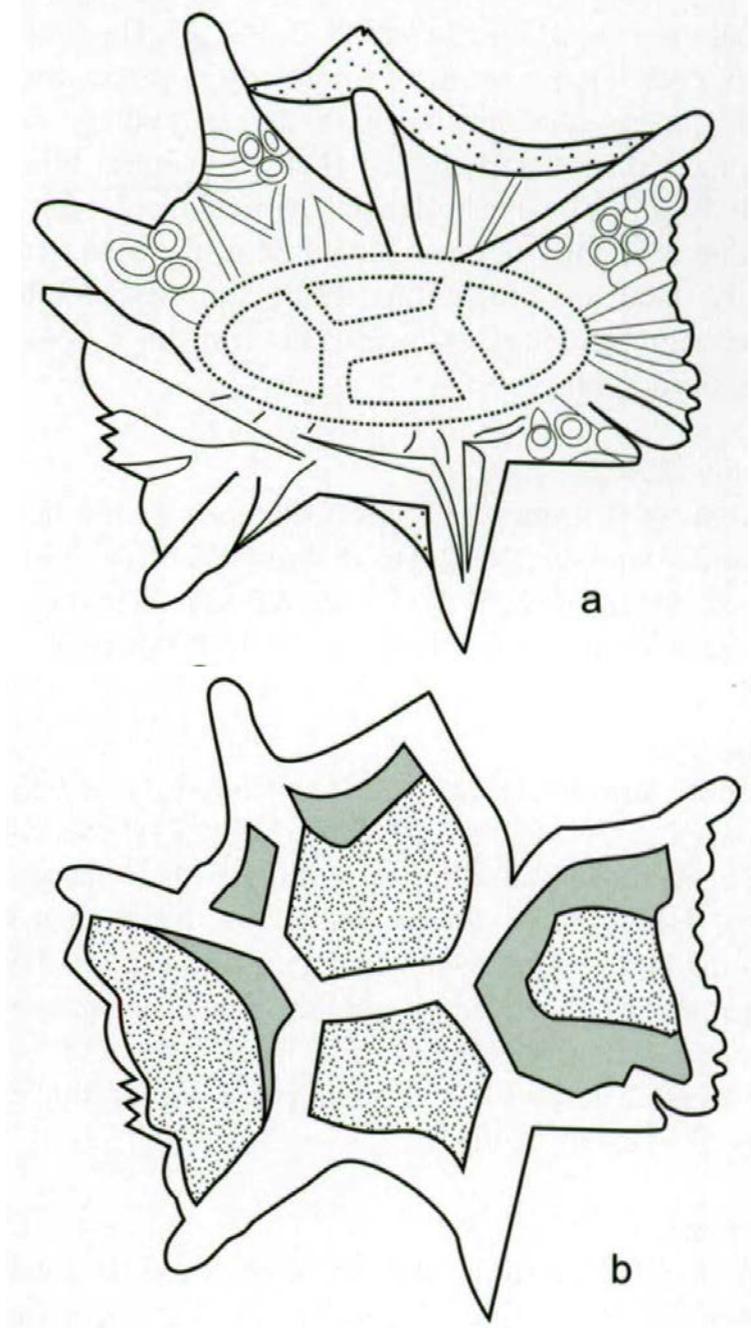


10. *Chiphragmalithus vandenberghei* Steurbaut (2011)



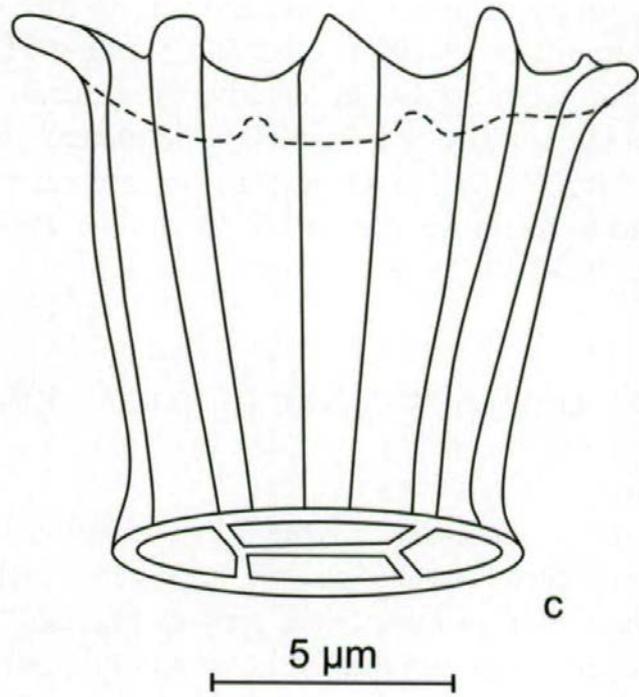
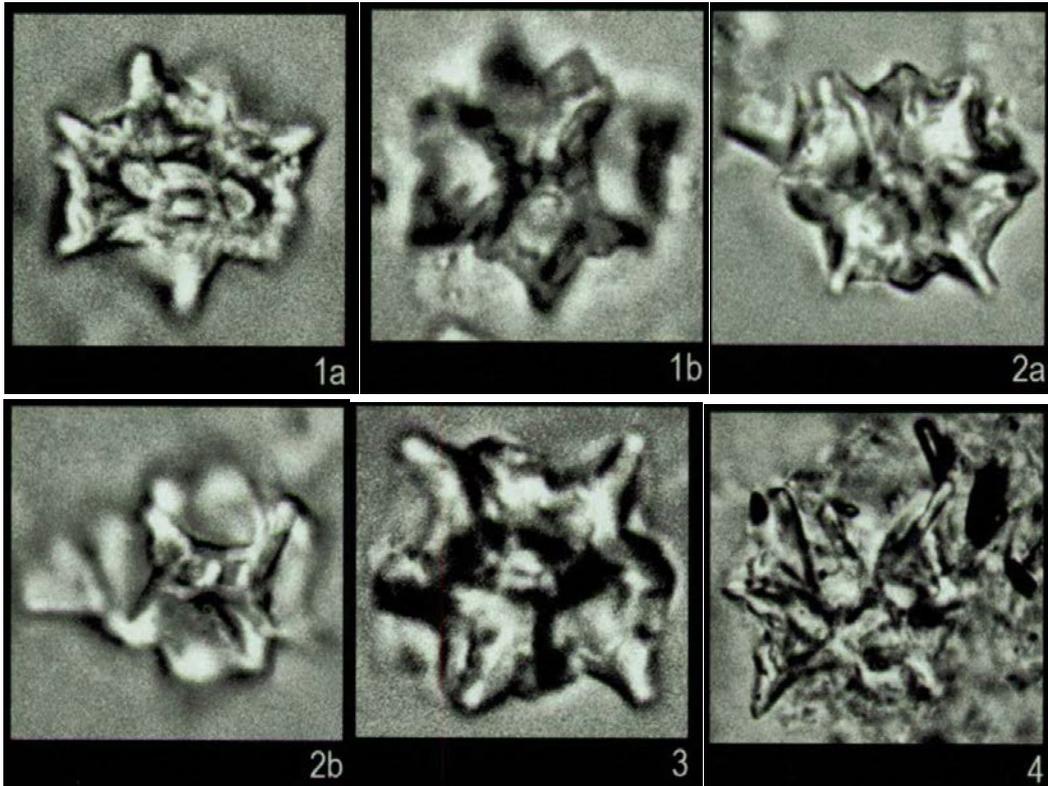
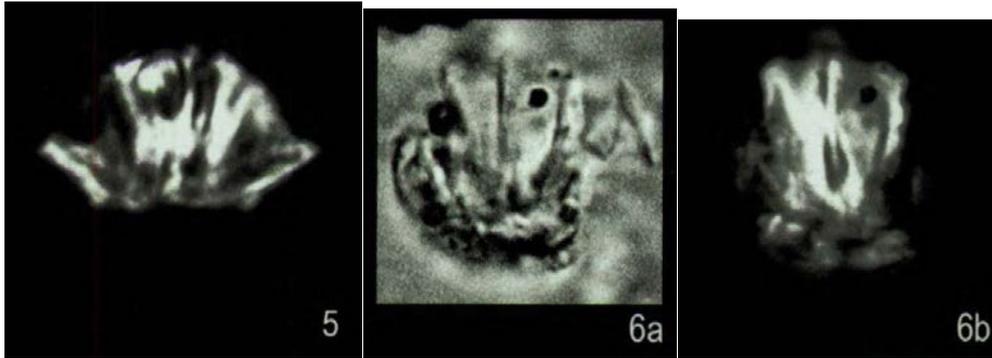


Fig. 23

Fig. 23. Composite drawing of the holotype of *Chiphragmalithus vandenbergei* sp. nov. (IRSNB b6415) from 103.32 m depth in the Vlakte van de Raan borehole: a = low focus, b = high focus, c = side view.





Pl. 2, Figs 1-6

Pl. 2, figs. 1-6. *Chiphragmalithus vandenberghae* sp. nov. 1: Vlakte van de Raan BH, 103.32 m, holotype, u-NP13, a = t. l. - low focus, b = t. l. - high focus, L = 13.6 μ m, (IRSNB b6415); 2: Vlakte van de Raan BH, 103.32 m, paratype, u-NP13, a = t. l. - low focus, b = t. l. -high focus, L = 14.4 μ m, xl234 (IRSNB b6416); 3: Vlakte van de Raan BH, 103.32 m, paratype, u-NP13, a = t. l. - low focus, b = t. l. - high focus, L = 13.6 pm, (IRSNB b6417); 4: Vlakte van de Raan BH. 106.62m, paratype, u-NP13, t. l., L = 18.4 μ m, (IRSNB b6418); 5: Vlakte van de Raan BH, 122.60 m, paratype, m/u-NP13, c. p., L = 16.0 μ m, (IRSNB b6419); 6: AK70, paratype, l-NP14, a = t. l., b = c. p., L = 12.0 μ m, (IRSNB b6420).

Derivatio nominis: Very conspicuous solid construction, leaving a lasting impression, much in line with the personality traits of Prof. Dr. Noel Vandenberghe (K. U. Leuven, Belgium), to whom this new species is dedicated, in commemoration of his role in unraveling the stratigraphy of the Oligocene of Belgium.

Holotype: Fig. 23 and Pl. 2, Fig. 1 (IRScNB b6415) (negatives stored in the collections of the RBINS).

Locus typicus: Vlakte van de Raan borehole (999A/0015), Belgian offshore area; 52°34'35"N, 2°45'23"E; 103.32 m depth.

Stratum typicum: Aalter Formation, Beernem Sand Member, upper part NP13; early late Ypresian, ~49.8 Ma.

Paratypes: Five specimens figured of which four are from the Vlakte van de Raan borehole: two from 103.32 m depth (Pl. 2, Figs 2-3) (IRScNB b6416-b6417), one from 106.62 m depth (Pl. 2, Fig. 4) (IRScNB b6418), and one from 122.60 m depth (Pl. 2, Fig. 5) (IRScNB b6419), all dated as uppermost NP13, and one from unit C2 (sample AK70) of the Tolagaysor Formation at Aktulagay (Kazakhstan) dated as basal NP14 (Pl. 2, Fig. 6) (IRScNB b6420).

Diagnosis basal: Large, robust, heterococcoliths, shaped like a reverse frustum of a cone. Elliptical outline at their proximal end and strongly flaring in distal direction, consisting of an irregular outer rim with multiple solid ribs and spines amalgamated with the protruding H-shaped internal structure.

Description: The heterococcoliths of this new form are shaped like a reverse frustum of a cone (Pl. 2, Fig. 6). They are marked by an extremely irregular high wall, the outline

of which is elliptical at its proximal end but strongly flaring distally (Fig. 23c). Its height is about 1.5 to twice as long as the width of its proximal end. Due to its particular form, the outline becomes quadrangular to lightly rectangular in a two-dimensional projection in distal view (see Fig. 23a and Pl. 2, Fig. 4). The flaring wall, presenting a series of irregularly positioned ribs and spine, amalgamates with the protruding, also flaring and irregularly edged H-shaped central bridge (see Fig. 23b). The horizontal part of the H-shaped bridge is slightly oblique compared to the orientation of the diameters of the elliptical base of the coccolith. The entire structure is clearly birefringent in cross-polarized light.

Dimension: Length (x = along the longest diameter of the basal elliptical structure) = 12.0 to 18.4 μm Width (y = along the smallest diameter) = 11.2 to 16.0 μm , Height (z) =>15 μm (holotype: L = 13.6 μm , W = 12.8 μm).

Discussion: This new form is closely related to *Chiphragmalithus armatus* PERCH-NIELSEN, 1971 (Pl. 2, Fig. 7) (IRScNB b6421) in having an elliptical outline with H-shaped central bridge and a flaring wall. It is distinguished from the latter by its oversized dimensions (up to 18.5 μm in length), its shape resembling a reverse frustum of a cone, with very high flaring wall (at least double as high as in *C. armatus*) and ornamented with multiple spiny rib (see Pl. 2, Fig. 6).

Distribution: Up to now known from offshore boreholes in Belgium (Vlakte van Raan, Goote Bank II), where it occurs in the lower upper Ypresian (upper part of the Gentbrugge Formation and in the Beernem and Member of the Aalter Formation). Also observed in the upper two third of the Tolagaysor Formation at Aktulagay (from sample AK50 to AK71). Hence, its range seems to be restricted to the upper part of NP 13 and the extreme base of NP 14.

Steurbaut, E., 2011. New calcareous nannofossil taxa from the Ypresian (Early Eocene) of the North Sea Basin and the Turan Platform in West Kazakhstan. *Bulletin de l'Institut royal des Science naturelles de Belgique, Sciences de la Terre*, **81**: 247-277.