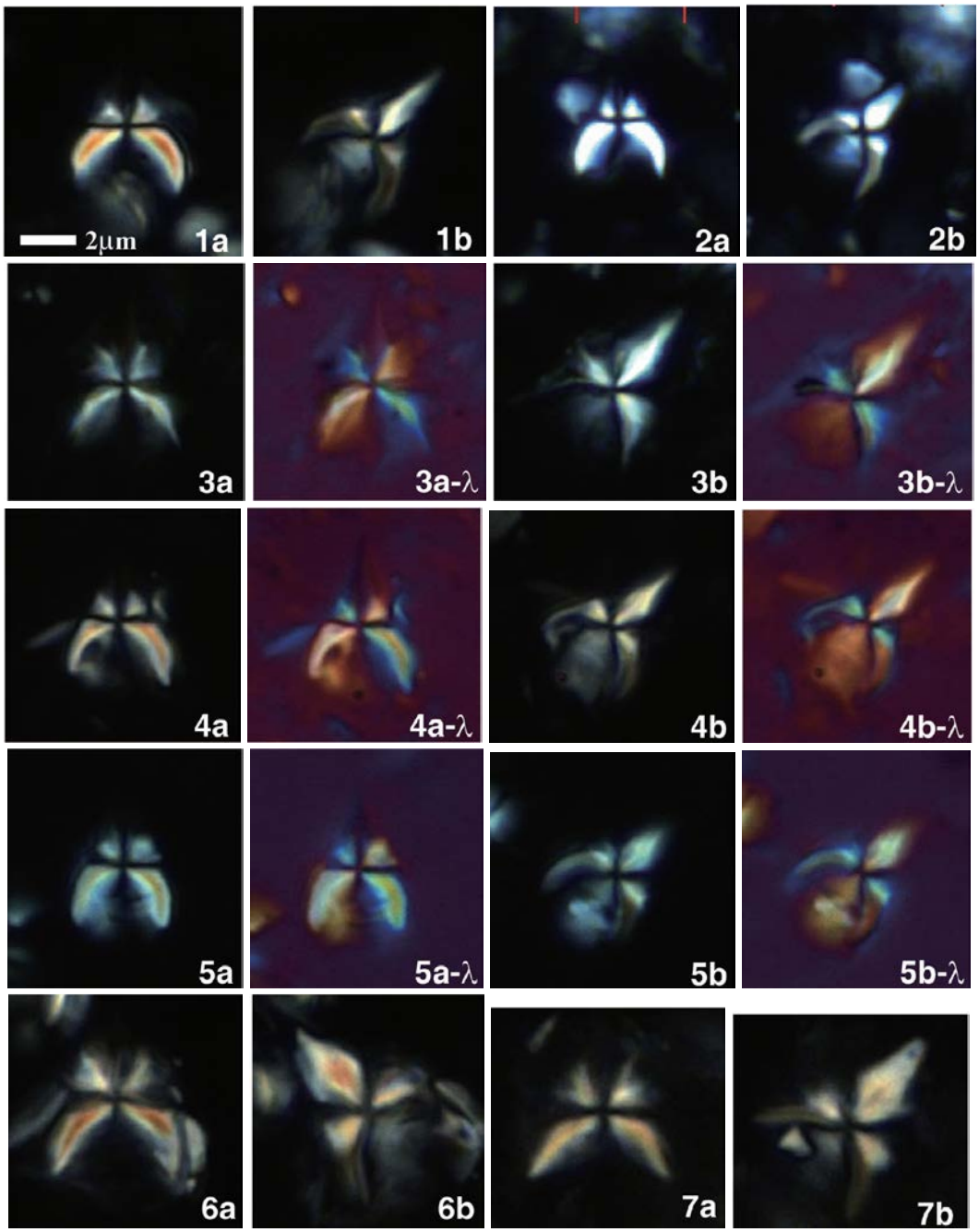
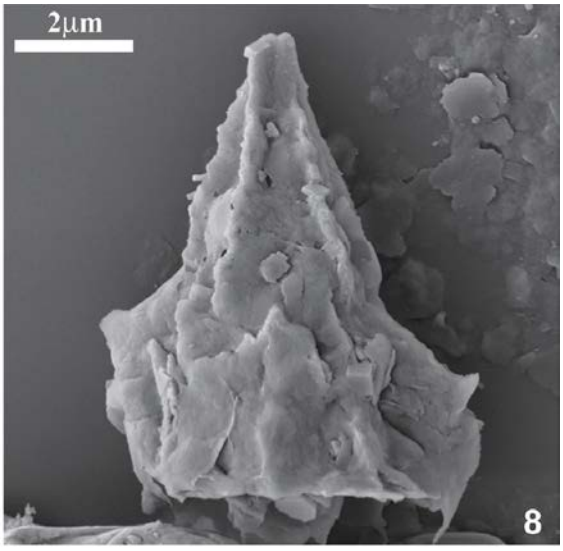
87. Sphenolithus pospichalii Jiang et al. (2016)





Pl. 1, figs 1–8

Sphenolithus pospichalii from Sample CNOOC LW13-1-1, 2710-2720m. For each specimen, a – aligned with polarisers, b – 45° to polarisers, λ – under gypsum plate.

Derivation of name: After Dr. James J. Pospichal (BugWare Inc., Tallahassee, Florida, USA) in honor of his tremendous knowledge of Mesozoic and Cenozoic calcareous nannofossils.

Diagnosis: Medium to large pyramidal-shaped sphenolith with the upper proximal elements always aligned parallel to the length of the species, displaying a needle-nose plier-shaped birefringence pattern with characteristic arched base.

Description: *Sphenolithus pospichalii* is medium to large in size with a tapered, monocrystalline apical spine and a well-developed, trapezoidal proximal cycle. The most important feature of this form is that the lateral elements (upper proximal elements) are always aligned parallel to the length of the species. Its birefringence pattern under polarized light resembles a needle-nose plier, in which the upper quadrants are triangular while the lower quadrants are bracket-shaped forming a flat-topped arch. The upper quadrants are ≤ ½ the size of the proximal quadrants. Under polarized light, only the outer elements of the proximal cycle are highly birefringent when oriented at 0° to either optical axis; while oriented at the 45° position, the apical spine and the upper quadrant are highly birefringent with the entire lower quadrant faintly so.

Differentiation: *S. pospichalii* differs from all other sphenoliths by its needle-nose plier shaped overall birefringence pattern, particularly the bracket-shaped lower quadrants forming a flat-topped arch. It is most similar to *Sphenolithus milanetti*; however, the latter species has a much shorter apical spine, and also has no lateral elements aligned parallel to the length that instead gives *S. pospichalii* a flat-topped arch shaped birefringence pattern under cross polarized light.

Remarks: *S. pospichalii* shows very close resemblance in the overall birefringence pattern to *Sphenolithus "vietnamensis"*, which is considered invalid because it is only illustrated in a web page (http://www.varol.demon.co.uk/vietnamensis.html). However, the former has a characteristic flat-topped arch-shaped lower quadrant at both the 0° and 45° positions, possibly as a result of better preservation.

Dimensions: For the 20 specimens measured, **Base width:** 4.5μm (min.), 6.1μm (max.), 5.3μm (mean); **Height:** 6.0μm (min.), 10.2μm (max.), 8.1μm (mean).

Holotype size: Base width: 5.0mm; **Height:** 8.0mm.

Holotype: Pl. 1, fig. 1.

Paratype: Pl. 1, fig. 3.

Type locality: South China Sea; CNOOC Well LW13-1-1 (~19.21°N, ~114.97°E; water depth: 1920.6m).

Type level: early Miocene (Zone NN4) CNOOC Sample LW13-1-1, 2710–2720m (2720m below sea floor).

Observed stratigraphic range: Zone NN4. Its highest occurrence was found right below that of *Helicosphaera ampliaperta* (upper boundary of Zone NN4), its acme at the basal part of NN4. Its first occurrence may be in upper NN3 (Lord *et al*., 2009) but cannot be determined in this study due to the uncertainties inherent to the use of drill cuttings.

Observed geographic distribution: This species was observed from the offshore Philippines, the northern slope of the South China Sea, and the Gulf of Mexico, which suggests a global, subtropical distribution.

Depository: All materials are archived and deposited at the Department of Ecology, Jinan University, Guangzhou, China.

Jiang, S., Wang, Y., Varol, O., da Gama, R.O.B.P. & Blaj, T., 2016. A new early Miocene Sphenolithus species from the South China Sea. Journal of Nannoplankton Research, 36(1): 61–63.