

New Middle Miocene genus *Olladiscoaster*

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Olladiscoaster is jar shape and characterized by having a kite or boomerang-shaped distal cover; thus, the primary criterion to distinguish it from *Discoaster*. The species' outline or central area can be circular, hexagonal, or stellate. The bulged proximal side possesses ridges and is often decorated with a stellate, hexagonal or star-shaped proximal knob, but the knob may be absent in rare cases. The sutural ridges formed by deep cavities rise towards the center and are coated with a boomerang or kite shaped distal cover. *Olladiscoaster* has segments that often display vestigial free length or lack free length entirely. Species randomly settle in the plan or distal view because they possess a similar height/width ratio. Olladiscoasters are extinct in plan view (the c-axis is aligned with the microscopical axis) but birefringent and display strong interference colours at the side view,

The samples were derived from various commercial oil wells in the Gulf of Mexico, IODP Leg 354, Site U1451B, DSDP Leg 154, Site 926A and USGS-NASA Langley core in Hampton, VA, USA, and studied in the Light Microscope (LM) using the mobile mount technique and in the Scanning Electron Microscope (SEM). The different profiles for most of the species are mapped.

Olladiscoaster ranges from 14.75 Ma to 11.90 Ma within the Middle Miocene (Zone NN5-NN7). Diverse and high abundances of *Olladiscoaster* were noted at 13.50 Ma and 13.21 Ma (within Zone NN6).

Three groups of *Olladiscoaster* were recorded primarily based on the characteristics of the segments. Other criteria used include the presence or absence of the proximal knob and the morphology of the knob when present. *Olladiscoaster* virginianus group are characterized by having segments with free length and a hexagonal shape central area with a boomerang shape distal cover. This group is related to the *Discoaster musicus* group and possibly evolved from them. *Olladiscoaster molae* group has segments with vestigial free length and a stellate outline (except for *O. vestigium*, which is hexagonal) with a proximal knob. *Olladiscoaster bordii* group has segments without any free length and displays circular outlines (except for *O. perplexus*, which is hexagonal).

Ten new species, *Olladiscoaster artatus*, *Olladiscoaster bordii*, *Olladiscoaster cruzii*, *Olladiscoaster lepidus*, *Olladiscoaster molae*, *Olladiscoaster perplexus*, *Olladiscoaster self-trailiae*, *Olladiscoaster superbus*, *Olladiscoaster vestigium* and *Olladiscoaster zucciae* are established. Three new combinations, *Olladiscoaster catinatus*, *Olladiscoaster tokerae* and *Olladiscoaster virginianus*, are introduced.

