

## Overgrowth on *Discoaster* and *Zygrhablithus* during the PETM: results from Sr/Ca measurements, stable isotopes and SEM analyses

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Discoasters are useful biostratigraphic markers. Their origin, however, is still under debate. SEM analysis revealed that discoasters and *Zygrhablithus*, present in sediments covering the Late Paleocene to Early Eocene, are severely overgrown. This overgrowth was demonstrated geochemically by measuring Sr/Ca ratios in individual specimens of *Discoaster* covering the Early Eocene Hyperthermal Event (ETM2) Elmo. Also, stable isotope results obtained from separated size fractions that are dominated by discoasters indicate that calcification either took place deep in the water column, which would be in agreement with the general assumption that discoasters are deep-dwellers, or could be interpreted as discoasters being largely composed of carbonate that was formed during early diagenesis.

As a means of demonstrating the overgrowth on both nannolith taxa, we present overgrowth profiles of *Discoaster* and *Zygrhablithus* during the Paleocene Eocene Thermal Maximum (PETM), ODP Core 1263C, Walvis Ridge. The overgrowth profiles were obtained during measurements of Sr/Ca ratios through individual *Discoaster* and *Zygrhablithus* with an ion probe. The amount of overgrowth was calculated by comparing the primary calcite Sr/Ca with the Sr/Ca measured in the *Discoaster* size fractions. Overgrowth profiles and SEM images imply that the secondary calcite covering the nannoliths is dissolved during deep-sea carbonate dissolution that accompanied the PETM or was never formed.

Furthermore, we analysed the overgrowth on these two nannolith species throughout the PETM interval at different sites. The degree of overgrowth varied throughout the interval and at different sites, and correlates to geochemical conditions in the sediment.