

Radiolarian biostratigraphy of the Upper Cretaceous Suhaylah Formation in the Wadi Jizzi area of the Oman ophiolite

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The Oman ophiolite, a member of the Tethyan ophiolites, crops out over 600 km long and up to 150 km wide in the Oman Mountains. The ophiolite suite consists of mantle peridotites, gabbros, a sheeted dyke complex, and extrusive lavas overlain by pelagic sediments. The extrusive lavas have been subdivided into three volcanic units: the V1 lava with the N-MORB signature (Geotimes Unit), the V2 lava formed by intra-oceanic volcanism (Alley unit), and the V3 lava (Salahi unit) generated by intra-plate seamount magmatism (Ernewein et al., 1998). Pelagic sediments with metalliferous sediments commonly occur at the boundaries between these volcanic units. The pelagic sediments, called the Suhaylah Formation, have been studied by Fleet and Robertson (1980) in terms of depositional environments. Tippit et al. (1981) conducted radiolarian biostratigraphic study for the Suhaylah Formation intercalated in the V2 lava and in and overlying the V1 lava. They concluded that radiolarians range in age from early Cenomanian to Santonian; however detailed stratigraphic distributions of radiolarians were not shown in their study. In order to understand the pelagic sedimentation and history of volcanic activity, I have reinvestigated the lithology and radiolarian biostratigraphy of pelagic sediments.

Radiolarian study has been conducted in "Suhaylah" section, about 40 km west of Sohar. This section consists of the V1 lava and overlying metalliferous and pelagic sediments of which the maximum thickness reaches 18 m. The sediments of this study are subdivided into three lithologies: metalliferous sediments inter-bedded with thin chert layers (8 m), red mud with chert intercalations (4 m), and micritic limestone (6 m). The metalliferous sediments is dark purple to dark red in color, weakly stratified, and very fine grained with metallic luster. The thin lamination within the bed is frequently observable. The red mud is very fine grained. In the upper part of the mud sequence, several chert layers are intercalated with the mud. The micritic limestone is red in color in the lower part and greenish gray in the upper part.

Based on the species composition, I recognized two assemblages, Assemblages A

and B. Assemblage A, recognized in the chert within metalliferous sediments and red mudstone, contains *Thanarla pulchra* (Squinabol) and *Guttacapsa biacuta* (Squinabol). According to O'Dogherty (1994), the last occurrences of *T. pulchra* and *G. biacuta* are near the top of Cenomanian. Thus, Assemblage A is assignable to late Cenomanian. Assemblage B, characterized by the abundant occurrence of *Rhopalosyringium scissum* O'Dogherty and *Dictyomitra multicostata* Zittel, is recovered from red mudstone and micritic limestone. The first occurrences of *R. scissum* and *D. multicostata* are recognized near the base of Turonian (O'Dogherty, 1994). This indicates that Assemblage B is assignable to Turonian. Based on the occurrences of these radiolarians, the boundary between Cenomanian and Turonian is thought to be present in the red mudstone just above the V1 lava.

References

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