

Geology of Ladakh Himalayas in northern India: Radiolarian fossils from Indus suture zone

Satoru Kojima[1]; Talat Ahmad[2]; Masayuki Ehiro[3]; Tomoyuki Ohtani[4]

[1] Dept. of Civil Eng., Gifu Univ.; [2] Dept. of Geol., Univ. of Delhi; [3] Tohoku Univ. Museum; [4] Gifu Univ.

The Indus suture zone, boundary between the Eurasian continent and the Indian subcontinent, extends from Tibet to Pakistan through India. Indian sector of the suture occupies northern part of the Ladakh Himalayas, and is split into two branches: northeastern Shyok and southwestern Indus (s.s.) sutures. The latter is the main suture, and the former is considered to be remnants of the small marginal sea along the Eurasian continent. Gabbro-basalt-chert-sandstone succession of the Nidar ophiolitic complex along the Indus suture (s.s.) in the Nidar area is dated as Hauterivian to Aptian (Early Cretaceous) by the radiolarian fossils. This is the first report on depositional age of the ophiolitic complex along the Indus suture zone (s.s.) in southeastern Ladakh. Sm-Nd mineral-whole rock isochron age of gabbro (139.6 ± 32.2 Ma) is consistent with the radiolarian ages. Early Cretaceous radiolarians are found from chert clasts in the basal part of the Indus Formation distributed near Upshi along the Indus suture (s.s.). The Indus Formation, Late Cretaceous to Early Eocene in age, is considered to be the fore-arc sediments underlain by accretionary complexes and ophiolitic rocks along the Indus suture zone, although the relationships between them now are faults. Since the Early Cretaceous chert clasts were recovered from the basal part (most probably Late Cretaceous) of the Indus Formation, the chert formation must have been deposited, subducted, uplifted, eroded and transported during very short time during middle Cretaceous time. Ophiolitic melanges called Shergol melange along the Indus suture (s.s.) in eastern Ladakh are composed of thrust sheets of coherent sedimentary rocks such as siliceous rocks, shale, sandstone and conglomerate, and ultramafic rocks. This geologic unit should not be called melange, because it has no block-in-matrix textures. Now we are trying to extract radiolarian fossils from this unit.