

A taphonomic study of the exceptionally preserved arthropod trackway in chemically precipitated silica of the Cretaceous Uhangri Formation (Haenam Basin, South Korea)

JONGYUN JUNG^{1,2*}, MIN HUH^{1,2}, BYUNG-DO CHOI¹

¹ Faculty of Earth Systems and Environmental Science & Korea Dinosaur Research Center, Chonnam National University, 77 Yongbong-ro, Buk-gu, Gwangju, 61186, Republic of Korea

² Mudeungsan UNESCO Geotourism Center, Chonnam National University, 77 Yongbong-ro, Buk-gu, Gwangju, 61186, Republic of Korea

*presenting author, jongyun1991@gmail.com

Abstract:

The Upper Cretaceous Uhangri Formation (Haenam Basin, southwestern Korea) is well-known for its ichnofauna with footprints of dinosaurs, pterosaurs, birds and traces of invertebrates. MINTER et al. (2012) reported trackways of arthropods as *Lithographus hieroglyphichus* abundantly preserved on a single horizon of cherty mudstone. More than 50 trails and about 30 burrows formed by the same trace maker, show a delicate and peculiar morphology with chevron marks. The cherty mudstone layer is composed of inorganically precipitated silica deposited in a saline-alkaline paleolake when supersaturated silica suffered a pH decline. Although trace fossils preserved in lacustrine precipitated silica are very unusual, especially superficial trails, the arthropod trace fossils in the Uhangri Formation are well-preserved with different morphotypes. Such morphotypes may be attributed to surface moisture of substrates while being shortly exposed under subaerial conditions. Furthermore, saturated-mud size sediments might have controlled the preservation of trails. The trace fossils in this study indicate an exceptional taphonomic process: 1) a temporary exposure of precipitated silica substrates; 2) overlay by ash-fall tuff; 3) presence of cherty-mud substrates. Moreover, this paleoenvironmental condition means that possible trace makers of *Lithographus*, which have been interpreted as pterygote insects, can inhabit a saline-alkaline lake environment with burrowing. Therefore, ongoing investigations and further studies could be expected to elucidate the possible trace maker and contemporary environment of the Haenam Basin.

Keywords: ichnology, taphonomy, *Lithographus*, saline-alkaline lake, precipitated chert