Paleomagnetic records from the Jurassic of the Korean Peninsula and their tectonic implications

Koji Uno[1]; Taewoo Chang[2]; Kuniyuki Furukawa[3]

[1] Graduate School of Human and Environmental Studies, Kyoto Univ.; [2] Kyungpook Univ.

Dep. of Geology; [3] Human and Environmental Studies, Kyoto Univ.

Early Jurassic sedimentary rocks were collected from the Kimpo area in the western part of the Korean Peninsula for a paleomagnetic study. Thermal demagnetization revealed two types of remanent magnetization components. One is a characteristic remanent magnetization component from seven sites that passes the fold test. Another component is a remanent magnetization component from four sites with anomalously low inclination values.

This characteristic component is interpreted to be of primary Early Jurassic origin because the folding occurred during the Middle to Late Jurassic. The primary directions together with previously reported ones give a mean direction and a paleomagnetic pole for the Kimpo area. This paleomagnetic pole shows good agreement with the coeval poles for the South China Block and is significantly removed from that for the North China Block, suggesting that the Kimpo area has been part of the South China Block at least since Early Jurassic times. The Kimpo area constitutes a part of the Imjingang Belt which is paleontologically allocated to the South China Block in its origin, while all Precambrian tectonic blocks that compose the basement of the Korean Peninsula are interpreted to be of North China origin. We conclude that the Imjingang Belt, including the Kimpo area, is a tectonic extension of the South China Block on the Korean Peninsula. The South China elements were obducted onto the North China Block at the site of the present Korean Peninsula during the collision event of the North and South China Blocks, and therefore the Korean Peninsula is composed of areas of both North and South China affinities.

The paleomagnetic directions of the low inclination component is shallower by 22 degrees that that of the characteristic component. The directional disagreement can only be described in terms of difference in inclination as the declinations are similar between two types of remanences. AMS measurement was performed in order to compare the magnetic fabrics between the two types. The samples of shallow remanence type have a more oblate pattern of distribution in T-P plots. Furthermore, the directions of the maximum axis of the AMS ellipsoid display an inclined pattern of distribution, whereas the other type shows flat distribution. Polished thin sections were cut perpendicular to the bedding planes and along the maximum AMS axis. Examinations of the polished thin sections revealed imbricated structures exclusively from the samples of shallow remanence type. This sedimentary structure is considered responsible for the occurrence of the shallow inclination of the remanent magnetization.