1.5-1.7Ga rocks discovered from Lesser Himalaya and Siwalik belt;40Ar-39Ar ages and significances

Yutaka Takigami[1], Harutaka Sakai[2], Yuji Orihashi[3]

[1] Kanto Gakuen Univ., [2] Earth Sci., Kyushu Univ, [3] Earth and Planetary Sci., TIT

40Ar-39Ar age studies are performed to granite in Lesser Himalaya and dolerite in Siwalik belt whose might be original rocks of metamorphic and granitic rocks in the Himalayas.

Kaberi granite is situtuated at 115km SE from Mt. Everest in the Lesser Himalaya and at the south of MCT. This area is uncovered with the Nappe which usually exists in the East Nepal and called as Taplejung Window. Though 40Ar-39Ar age spectrum of muscovite separated from granite indicates the pattern of degassing of Ar gas, ages of 960-1300C(39K: about 88%) are 1500-1600Ma. This result indicates that the original rock whose age is above 1600Ma has been weakly metamorphosed. Moreover, 40Ar-39Ar age at 1200C for muscovite separated from augen gneiss situated nearly north of Kaberi granite is about 1420Ma. As Ar gas has been degassed which is recognized in the age spectrum, the original age of this sample is above 1420Ma.

Bagmati Group in Siwalik belt is constituted by the dolerite and aeolian deposits of country rock which repeat three times by thrusts and form imbricate structure belt ranging in width of 3 to 4km. A thin slice of the Siwalik Group is tectonically sandwiched in the thrust sheets of schuppen zone. The 40Ar-39Ar ages of dolerite are 1741+-11Ma and 1679+-4Ma which are plateau like ages of 800-1100C(39K: about 50-60%). From muscovite separated from Quartzite which is the host rock of dolerite, a 40Ar-39Ar plateau age of 1744 +- 9Ma (39K: about 98%) has been obtained. This age is consistent with the age of dolerite. Moreover, U-Pb chime age of the Quartzite is obtained to be 1750-1800 Ma by Yokoyama, (National Science Museum)and Orihashi decided the Nd-Sm (CHUR) model age for the dolerite to be 1600 +- 200Ma. These results confirm the 1700Ma as the original age of these rocks from Bagmati Group.

At the south of Bagmati Group, large Pre-Cambrian lava exists and K-Ar ages of this lava is reported to be 1547+-20Ma and 1629+-30Ma which is consistent with 40Ar-39Ar results of dolerite and granite. Then, dolerite at Bagmati Group and Kaberi granite is considered to have accreted to the Asia at the collision of Indian Continent to the Asia Continent. And, as Searle reported the Nd-Sm model age of leucogranite as 1.5-2.2Ga, these Pre-Cambrian rocks might be original rocks of metamorphic and granitic rocks in the Himalayas.