result shows that genetic type of basement granite in north of Myanmar overland island arc is S-type granites related with subduction and collision. Zircons are euhedral-subhedral in shape and display oscillatory zoning in CL images as well as Th/U ratios (0.15~0.45), implying their magmatic origin.21 points yield a group of weighted mean 206Pb/238U ages at (102.7±0.81) Ma (MSWD=0.23), which show similarity to (97.8±3.6) Ma in the northern part of sampling points and (106±7) Ma in the southern part of sampling points.These results demonstrated that basement granite in Myanmar overland island arc was formed during the Early Cretaceous, indicating occurrence of magmatic intrusion event. The amalgamation between Simeon and Sibumasu block was started since the breakup of Gondwana, the subduction and collision of western Simeon block was earlier than Early Cretaceou, which imply that Simeon block experienced the evolutionary stages of active continental margin in latter stage of Early Cretaceous and were a perfect developed trench-arc-basin system.

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Observing the entire length and thermal annealing of unetched fission tracks in apatite

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Tracks created by fission events in ceramics are randomly-oriented, linear radiation-damage regions about 10 to 25 μm in length but only several nm in diameter. In the absence of a method to observe the entire length of a latent, unetched track, the details of the structure and the process of the thermal-annealing of tracks have remained elusive, despite their importance to fission track thermochronology. Here, we have used a novel sample preparation technique, together with advanced transmission electron microscopy (TEM), to successfully image the entire length and in situ thermal annealing of latent tracks created by 80 MeV Xe ions implanted in apatite. Track annealing significantly increases as the track diameter decreases along the ion trajectory from an initial diameter of 8.9 nm to ~ 1.5 nm at the end of the track (total track length ~ 8.1 μm). The initial, rapid reduction in etched length during isothermal annealing can be essentially explained by the rapid annealing of the sections of the track with smaller diameters, as observed directly by TEM.

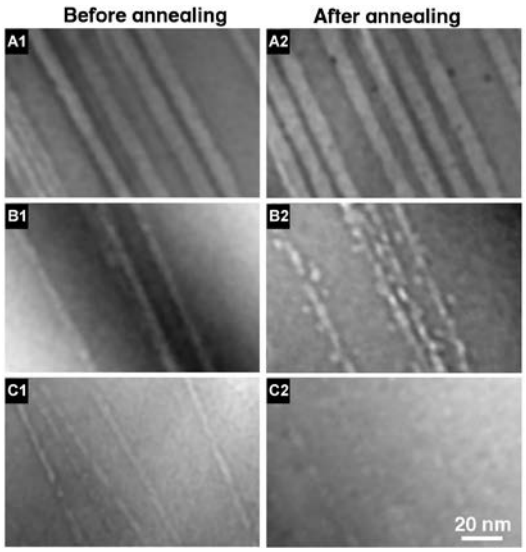

Fig. 1. In situ TEM images of latent 80 MeV Xe ion tracks in apatite at different target depths (x) before and after thermal annealing. In (A) x = 0 μm; (B) x = 4.5 μm; and (C) x = 7.2 μm. The annealing rate is significantly dependent on the track diameter at different locations along the ion trajectories. The change in track size in A is insignificant after heating at 330 ^{o} C

for 1 h and additional heating at 380 ^{o} C for 1 h. In contrast, significant segmentation and shrinkage of tracks is seen in B after the same heating treatment. The tracks in C almost disappear after a single heating at 330 ^{o} C for only 16 min.

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Late Mesozoic-Cenozoic exhumation of the Huangling Dome in the northern Yangtze Plate, China, inferred from AFT-(U-Th)/He thermochronology

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New and mostly published apatite fission-track (AFT) and (U-Th)/He data [1~5] are compiled to reveal the exhumation of the Huangling Dome in the northern Yangtze Plate, China. New AFT ages ranging from 87±9 to 111±15 Ma with mean measured track lengths between 11.8±1.6 and 12.0±2.0 μm, are obtained for the granitoid samples collected from the Huangling Dome in the northern Yangtze Plate.

The AFT-(U-Th)/He ages and thermal history modeling results reveal that the Huangling Dome has experienced a three-stage cooling, and inferred exhumation history spanning the Late Mesozoic and Cenozoic eras. The first rapid cooling and inferred exhumation probably occurred ~150 Ma ago, subsequent slow cooling and inferred exhumation maybe took place during ~150–35 Ma, and a second rapid cooling was possibly arisen after ~35 Ma. The rapid uplift and denudation in the Early Cretaceous might have resulted from a combination of the Mesozoic lateral extrusion and rotation of the Qinling-Dabie Orogenic Belt and clockwise rotation of the Yangtze Plate, and an abrupt change from southwest to northwest in the drifting direction of the subducting Pacific plate at ~125 Ma. The final rapid exhumations after ~35 Ma was dominantly caused by the eastward and southeastward tectonic escape from the Tibetan Plateau imposed by the India-Eurasian collision and corresponding uplift of the Tibetan Plateau commenced ~55 Ma.

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Thermal history of the Jianghan Basin: Evidence from apatite fission track and vitrinite reflectance

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The thermochronometry of apatite fission track has been used a new technique to reconstruct the baisn's thermal history. Jianghan Basin is a Pre-Cenozoic marine residual Basin and it plays an important role in China's oil and gas exploration. In order to provide basic data for evaluation of the petroleum potential in the Jianghan Basin, basin's thermal history evolution is required.