Shape analysis of Miarolitic Cavities and Enclaves in the Kakkonda granite - Three-dimensional Analysis using an X-ray CT

Tomoyuki Ohtani [1], Yoshito Nakashima [1], Tsukasa Nakano [2], Hirofumi Muraoka [3]

[1] GSJ, [2] Geological Survey of Japan, [3] Geothermal Res. Dept., GSJ

We performed three-dimensional shape analysis of the miarolitic cavities and enclaves in the Kakkonda granite, NE Japan, to estimate the deformation of the granite. Three-dimensional shapes of miarolitic cavities and enclaves were extracted from the contiguous X-ray CT images stacked at intervals of 1mm. We fitted ellipsoids with three arbitrary axes to these cavities by computer programs and examined shape and axis orientations of ellipsoids. Three axes of ellipsoids were defined as a (shortest axis) < b < c (longest axis). The average aspect ratios of c:b and c:a were 0.78 and 0.59 respectively. The directions of a, b and c axis of ellipsoids prefer to E-W, N-S, and vertical respectively. The preferred orientation of ellipsoid axes seems to be explained by E-W compression