

## Observation of the growth texture of dipyramidal quartz

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Growth textures of the dipyramidal quartz were observed by cathode luminescence (CL) method and scanning electron microscopy (SEM) to clarify the growth mechanism of dipyramidal quartz. Examined dipyramidal quartz samples were collected from Itaya, Miyazaki prefecture, Japan and Sichuan China, and quartz which two crystals contacted in parallel was from the Otome mine, Yamanashi prefecture, Japan. Sichuan quartz consists of smooth  $r\{101\}$  and  $z\{011\}$  and rough (001) surfaces. Many triangular pyramidal hillocks were observed on the (001) surface. Its faces of the pyramidal hillock do not correspond to  $r$  and/or  $z$  growth surfaces. The faces are about 30 degrees rotated from  $r$  or  $z$  faces around  $c$ -axis. CL observations for the (110) section of the (001) growth sector show columned texture that elongate along the [001] direction and the zig-zag growth bands roughly in parallel to the (001). The width of the column is nearly same as that of the triangular pyramidal growth hillock. The CL analysis for the Itaya quartz show hexagonal zoned pattern on the (001) section. The hexagonal zoned pattern was also caused by growth of the pyramidal growth hillocks.

Growth of rough (001) surface is faster than that of smooth  $r$  and  $z$  surfaces, then the  $r$  and  $z$  surfaces developed with diminishing of the (001) surface.