

## Cathodoluminescence petrography of P-type jadeitites from the New Idria serpentinite body, California

\*Naoko Takahashi<sup>1</sup>, Tatsuki Tsujimori<sup>1</sup>, Masahiro KAYAMA<sup>2</sup>, Hirotsugu Nishido<sup>3</sup>

1. Tohoku University, 2. Department of Earth and Planetary Material Sciences, Faculty of Science, Tohoku University, 3. Department of Biosphere-Geosphere Science, Okayama University of Science

Because of strong emissions, cathodoluminescence (CL) observation is a powerful technique to characterize growth textures of nearly end-member jadeite. We applied this technique for a P-type (fluid precipitation) jadeite from the New Idria serpentinite body of the Diablo Range (California, U.S.A.). The investigated New Idria jadeite is a veined rock, consisting of pale-greenish jadeite matrix with numerous veins of white jadeite. Overall, nearly pure (> 95 mol%) jadeite crystal exhibits enough CL emissions for optical observations. The brightness of the emission divide into two contrasting portions, i.e., dark (pale-greenish matrix) and bright portions (veins). In the bright-CL portions, jadeite crystal shows a core-rim texture and/or an overgrowth texture; typically the blue-CL (or dull-blue-CL) cores are overgrown by the red-CL rims. Fine oscillatory growth, with rhythmic changes of red- and (dull-) blue-CL emissions, parallel to growth faces are also developed. Notably CL emissions from veins of older generation are somewhat obscure, likely due to intercrystalline deformation. The CL spectra shows broad overlapping peaks at ~320 and ~360 nm. In the blue-CL segments of jadeite crystals, intensity of these peaks is up to 10,000–120,000 arbitrary units (a.u.). In contrast, these of the red-CL segments of jadeite crystals reach up to 10,000–80,000 a.u. and have an additional peak at ~700 nm (5,000–70,000 a.u.). Electron microprobe analyses confirmed that less-bright CL-emission portions (dull-blue- or dark-CL) are more impure than the bright CL-emission portions (red- or blue-CL jadeites). Growth segments with blue or dull-blue-CL-emission has a higher aegirine component and TiO<sub>2</sub> than those with red-CL jadeites. The spectrum type (color) and brightness are basically controlled by impurities as CL activators.

Keywords: cathodoluminescence, jadeite