Application of Electron Back-Scattering Diffraction (EBSD) to identify mineral phases in a SEM

"Toshihiro Kogure and Osamu Tachikawa (Department of Earth and Planetary Science, Graduate School of Science, the University of Tokyo)

Electron back-scattering diffraction (EBSD) is a unique tool to obtain crystallographic information from specimens in a scanning electron microscope (SEM). Crystalline phases, crystal orientation and the relationship between the crystal orientation and morphology of the specimens are readily determined by analyzing Kikuchi patterns. Practical methods and developed software to identify mineral phases are introduced.

Fig. 1. (a) Observed EBSP from biological calcite (CaCO₃) (Contrast was enhanced by image processing), (b) Tracing several Kikuchi bands on the image, (c) A calculated pattern.

Keywords: EBSD, phase identification, Kikuchi pattern, SEM