

Scanning Electron Microscopy (SEM) analysis of Black Carbon in Arctic snow

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Snow and ice on glaciers in Arctic contain various atmospheric depositions, such as soot (black carbon) and mineral dusts. These light-absorbing impurities can reduce surface albedo and affect melting of glaciers. Thus, it is important to understand optical characteristics of the impurities on Arctic glaciers. In this study, we analyzed structure and surface chemistry of black carbon collected from snow in several Arctic regions (Siberia, Alaska, Greenland, and Sapporo) with Scanning Electron Microscope (SEM, QUANTA FEG 450) and Energy Dispersive X-ray Spectrometer (EDS). Microscopic observation revealed that snow samples from Alaska, Greenland and Sapporo contained black carbon particles with chain-like structures and compact aggregate structures as shown in Scarnato *et al.* (2013). However, the proportion of these black carbon structures were different among the samples. For example, snow from Greenland contained higher abundance of chain particles, while that from Alaska contained higher compact particles coated by membrane like material.

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