The electrical conductivity (σ) of single-crystal Amelia albite has been measured parallel to the b axis under controlled oxygen fugacity near the QFM buffer up to 1406K. Two specimens were used in the investigation. One was held at temperatures between 1353 and 1384K for a total of 3200 hours in order to produce maximum-disordered monoclinic albite (Piwinskii & Duba 1974). These temperatures were below the reported melting point of albite, 1391K (Grieg & Barth 1938). The other sample, triclinic ordered albite, was cycled between 673 and 1223K, temperatures below the triclinic-monoclinic inversion (Duba & Piwinskii 1974).

The σ of high albite (monoclinic) during melting at 1406K as a function of time and frequency (ν) is shown in Figure 1. It is clear that the σ of high albite increases on melting by approximately half an order of magnitude at 1 to 10 kHz, but decreases at all ν's below 1 kHz during the first hundred hours.

The σ of low albite (triclinic) during melting at 1406K as a function of time and frequency is shown in Figure 2. The σ was found to increase at all ν's. The σ measured at 1 and 10 kHz increased by approximately 2.5 orders of magnitude, and the σ measured at 200 Hz increased by approximately two orders of magnitude.

These results indicate that the crystal structures of low and high albite preceding melting exert a control over both the ν-dependence of the σ observed on melting and the magnitude and direction of the conductivity change. These new data further qualify the observation of Khitarov & Slutskii (1965) regarding the sharp increase (approximately two decades) in σ at-

Fig. 1. The electrical conductivity (σ) of high albite as a function of time at 1406K.

Fig. 2. The electrical conductivity (σ) of low albite as a function of time at 1406K.
tributed to melting in albite. In systems such as NaAlSi3O8 which exhibit order-disorder phenomena, the degree of disorder attained prior to melting may control the σ change upon melting. Thus, we may expect to observe such features, upon melting, in rocks such as basalt which contain plagioclase feldspar as a major constituent.

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