Soluble impurity diffusion by recrystallization during deformation of ice

Motoyuki Sato, Nobuhiko Azuma, Yuji Osabe, Morimasa Takata

1. Background

Water in the core of ice is a source of impurities, which can affect the purity of ice crystals. The presence of these impurities can influence the purity of the ice crystal. In this research, the authors have studied the diffusion of soluble impurities during the recrystallization of ice under deformation.

2. Experimental Method

The experiments were conducted on samples with dimensions of 15 x 25 x 30 mm. The samples were subjected to deformation and then examined for changes in impurity diffusion. The samples were deformed at a constant velocity of 10% per second, and the diffusion of impurities was measured over time.

3. Experimental Results

The experimental results showed that the diffusion of impurities increased with increased deformation. The results also indicated that the diffusion rate was dependent on the deformation rate.

4. Conclusion

The results suggest that the diffusion of impurities in ice can be controlled by adjusting the deformation rate. Further studies are needed to understand the mechanisms behind this diffusion process.

References