# $^4$He crystals on an oscillating plate

T. Yoshida, A. Tachiki, N. Ishii, R. Nomura, and Y. Okuda

Department of physics, Tokyo Institute of Technology, Tokyo 152-8551, Japan

$^4$He crystals placed on a transversely oscillating plate was investigated visually in superfluid. The plate was glued on a piezo device which was driven in a shear mode electrically. The amplitude of the oscillation at low temperatures was about 0.7 $\mu$m by application of $\pm$150 V. Facets of a single $^4$He crystal of 3 mm in diameter were destroyed by a single saw-tooth pulse of 1 ms duration at 0.4 K. In case of a larger crystal of 7.5 mm in diameter and 0.8 mm in height, only one side of the crystal was melted by application of 100 pulses with 10 ms intervals; crystal surface of the left hand side in view approached to the right hand side while the right hand side never moved. The crystal grew in the vertical direction and its height became about 1.4 mm during the pulses. The crystals were found to respond to the oscillation sensitively and the saw-tooth pulse induced a very anisotropic motion of the crystal surface. Inchworm drive is a well known method to drive an object on a plate utilizing the difference between the static and dynamic frictions. A possible application of this device for driving $^4$He crystals in superfluid will be also discussed.

Section: QS - Quantum solids

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