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The boiling bubble dynamics under gamma ray irradiation YASUYUKI IMAI, KOJI OKAMOTO, University of Tokyo, HARUKI MADARAME, TOMOJI TAKAMASA, Tokyo Univ. of Marine Science and Technology — The understanding of heat transfer under irradiation environment is still inadequate. The boiling experiment has never been carried out under irradiation environment. In this study, the boiling conditions under gamma-ray irradiation were investigated to evaluate the effect of irradiation so that the pool vessel with a test piece was placed in the irradiation room. The test piece in the water vessel was irradiated by ^{60}Co gamma rays at a predetermined dose rate and for a predetermined period. The boiling curve of nucleate boiling for oxidized titanium wire under irradiation had been measured. Also, the images of the boiling conditions under irradiation had been captured using a high-speed video camera. Using a high-speed camera, motion of the bubbles could be clearly visualized. The active nucleation site density decreased with increasing dose. The several nucleation sites have been deactivated under the irradiation condition. The decrease of heat transfer by reduction of active nucleation site density causes the shift of boiling curve to higher wall superheat temperature.

Yasuyuki Imai
University of Tokyo

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