Determination of Onset of Significant Void (OSV) from void fraction profiles measured by intrusive or non-intrusive method

정현원, 심재우[1,†]
Dankook University; [1]단국대학교
(wjshim@dankook.ac.kr[†])

The onset of Significant Void (OSV) is one of the important parameters in a two-phase flow boiling system. OSV is basically calculated by void fraction profiles and the profiles are constructed by the void fractions measured by the intrusive or non-intrusive techniques. Although these techniques measure the same values of void fraction, they have an important fundamental technical issue because they use different detecting sources, which result in different uncertainty. The intrusive technique uses radiation sources and the other uses the photography method. In this study, we developed an algorithm to determine OSV by combining the three graphical extrapolations into one; Staub et al. (1968), Martin (1970), and Serizawa and Kenning (1979) methods under unified decision criteria. The void fraction data used are results of various measuring techniques, which were in a wide range of pressure, hydraulic diameter, heat flux, mass flux, refrigerants, etc. Finally, the validity of our algorithm is evaluated by the well-known correlation of Saha and Zuber (1974).