Sci. & Cult. 78 (9–10) 448-454 (2012)

THE LIMITING TEMPERATURE OF THE SUPERHEATED LIQUID STATE

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ABSTRACT : The superheated state of a liquid is a metastable state and within a finite period of time will revert to a more stable vapor phase. The stability of the superheated state, or how long the superheated state will on an average continue to exist, depends on the kinetics of microbubbles scattered through out the liquid. The superheated state is maintained by an energy barrier, which inhibits the microbubbles from growing irreversibly into vapor bubbles, the details of which is discussed briefly in this article. The temperature, up to which the superheated liquid can endure, is the limit of superheat. Experimental methods for studying the limit of superheat are briefly discussed. Models like the thermodynamic limit and the kinetic limit, which are used to predict the limit of superheat, are discussed and a new model on the limit of superheat is presented.