MECHANISM OF NANOBUBBLE FORMATION IN WATER ON A HYDROPHOBIC SURFACE

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S u m m a r y

A possibility for nuclei of a new phase to emerge in the form of nanobubbles in water contacting with a hydrophobic surface (the "vapor–liquid" phase transition) at temperatures significantly lower than the ordinary phase transition temperature is discussed. A new mechanism has been proposed to explain this temperature reduction; namely, the repulsive forces significantly increase the chemical potential of the molecules in the liquid phase near the hydrophobic surface in comparison with that in the gas phase. The corresponding estimates show that, at the normal atmospheric pressure, the phase transition temperature can be shifted by about 50 K.