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Vapor bubble dynamics in confined geometries CHAO SUN, EDIP CAN, RORY DIJKINK, DETLEF LOHSE, ANDREA PROSPERETTI, Physics of Fluids Group, University of Twente, the Netherlands — Vapor bubble dynamics in two different confined geometries has been studied experimentally and theoretically. Individual vapor bubbles were created by laser pulses focused in water-filled cylindrical glass tubes (1D) and in between two parallel plates (2D). The control parameters are the energy input and the confinement of the bubble, i.e. the diameter of the microtube or the separation between the two plates, respectively. It is found to be independent of the contact angle. Traditional models of vapor bubble growth, which only consider inertia and viscous friction, fail to describe the observed vapor bubble dynamics. However, by in addition considering the heat transfer between the liquid and the vapor bubble, we can quantitatively account for the experimental data, both during growth and collapse of the bubble.

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