

BULK CONDENSATION OF SUPERSATURATED VAPOR IN DUST-LADEN FLOW

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ABSTRACT Bulk condensation in a dust-laden flow of vapor–gas was numerically simulated taking into account size distribution of dust particles. Two types of distribution (monodisperse and lognormal) were considered. Changes in the bulk condensation process due to the presence of dust in the flow were revealed by comparing the results obtained for dust-free and dust-laden flows for the monodisperse distribution. Variations in the relative contributions of the homogeneous and heterogeneous mechanisms due to variations in the flow dustiness were considered. The effect of the standard deviation in the dust particle sizes on the bulk condensation in the dust-laden flow was illustrated by comparing the data obtained for the monodisperse and lognormal distributions.