Institute of Chemical Engineering

Determination of the applicability range of the isotropic turbulence theory in a bubble column

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Abstract: A new parameter called novel hybrid index (NHI) has been used in order to identify the U_g and Reynolds ranges of applicability of the concept for the stable equilibrium bubble diameter in a bubble column (BC). Both parameters were correlated. The stable equilibrium bubble diameter was defined on the basis of the local isotropic turbulence theory. In the case of BC operation with two aqueous solutions of 2-pentanol (0.5 and 1.0 vol. %) was found that this theory is applicable in the U_g range from 0.060 to 0.07 m/s. These conditions belong to the heterogeneous flow regime of the BC operation.

Attachments:

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