

Extended abstract

Interfacial area concentration transport can be modeled by using an interfacial energy transport equation. An approximation equating the continuous phase velocity and the interface velocity allows the source term in the interfacial energy balance to be formed from the continuous phase mechanical energy balance. However, the interfacial area concentration equation can be thought of as an inverse length scale transport equation. Therefore, only those terms in the source which have an appropriate length scale can actually contribute to the formation of interfacial area and thus the source term must be restricted by constraints on the length scales of the terms in the source. Also, attention must be paid to the meaning of the approximation of neglecting the difference between the continuous phase and interface velocities. This approach is applied to bubble column data.

An alternative is to improve the initial approximation of continuous and interface velocities by relating instead the continuous and dispersed phase velocities by a model. If this approximation is good enough, partitioning the source term may be unnecessary.