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The Maxwell-Stefan approach to mass transfer

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Abstract

The limitations of the Fick's law for describing diffusion are discussed. It is argued that the Maxwell-Stefan formulation provides the most general, and convenient, approach for describing mass transport which takes proper account of thermodynamic non-idealities and influence of external force fields. Furthermore, the Maxwell-Stefan approach can be extended to handle diffusion in macro- and microporous catalysts, adsorbents and membranes.

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Keywords

Multicomponent diffusion; porous media; membrane separations; Fick's law; ionic

diffusion; zeolities

Abbreviations

CVD chemical vapour deposition; HETP height of a theoretical plate; HTU height of a transfer unit; LDF linear driving force; M-S Maxwell-Stefan; MTBE methyl tert-butyl ether; NTP number of theoretical plates; PEG polyethylene glycol; SFD single file diffusion

The Maxwell-Stefan approach to mass transfer, mackerel restores a sharp heaving hill.

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