

RESEARCH PAPERS

基于元素组成的含多个反应混合物的反应共沸点的充分必要条件

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摘要 Necessary and sufficient conditions for azeotropy in reactive mixtures are derived in terms of elemental composition, which shows that in the space of elemental compositions, they take the same functional form as the conditions for azeotropy in non-reactive mixtures. The production of methyl tert-butyl ether (MTBE) is taken as an example. It is found that there are a "pseudo" intermediate-boiling ternary reactive azeotrope at $p = 101.325$ kPa and two "real" ternary reactive azeotropes at $p = 101.325$ Pa. The introduced elemental compositions also reduce the dimensionality of the phase diagrams and provide a natural set of variables for visualization of phase behavior.

关键词 [reactive azeotropy](#) [necessary and sufficient condition](#) [multi-reactive mixture](#) [phase and chemical equilibrium](#)

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Necessary and Sufficient Conditions for Reactive Azeotropes in Multi-reaction Mixtures in Terms of Elemental Composition

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Abstract Necessary and sufficient conditions for azeotropy in reactive mixtures are derived in terms of elemental composition, which shows that in the space of elemental compositions, they take the same functional form as the conditions for azeotropy in non-reactive mixtures. The production of methyl tert-butyl ether (MTBE) is taken as an example. It is found that there are a "pseudo" intermediate-boiling ternary reactive azeotrope at $p = 101.325$ kPa and two "real" ternary reactive azeotropes at $p = 101.325$ Pa. The introduced elemental compositions also reduce the dimensionality of the phase diagrams and provide a natural set of variables for visualization of phase behavior.

Key words [reactive azeotropy](#); [necessary and sufficient condition](#); [multi-reactive mixture](#); [phase and chemical equilibrium](#)

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