Volume 7

A New Approach to Investigation of vdW Type of Equations of State

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摘要　A new approach to the investigation of vdW type of equations of state (EOS)is developed by
embedding a vapor pressure equation and a saturated liquidvolume equation into vdW type EOS, which results in a new function As(T). The As(T)possesses the properties of an attractive parameter A(T), and if an EOS isaccurate in the whole PVT space, then its numerical value equals A(T). As auseful tool for investigating EOS, the As(T) has been used to makecomparisonsamong RKS, PRSVII, PT and ALS EOS, and to indicate where the shortcomingsof the EOS are coming from. Based on the As(T), a possible way to develop a realpredictive equation of state is also suggested.

关键词　equation of state　saturated vapor pressure　saturatedliquid volume
分类号
DOI:

A New Approach to Investigation of vdW Type of Equations of State

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Abstract　A new approach to the investigation of vdW type of equations of state (EOS)is developed by embedding a vapor pressure equation and a saturated liquidvolume equation into vdW type EOS, which results in a new function As(T). The As(T)possesses the properties of an attractive parameter A(T), and if an EOS isaccurate in the whole PVT space, then its numerical value equals A(T). As auseful tool for investigating EOS, the As(T) has been used to makecomparisonsamong RKS, PRSVII, PT and ALS EOS, and to indicate where the shortcomingsof the EOS are coming from. Based on the As(T), a possible way to develop a realpredictive equation of state is also suggested.

Key words　equation of state; saturated vapor pressure; saturatedliquid volume

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