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Molecular recognition of organic guest vapor by solid adamantylcalix[4] arene

Gorbatchuk V., Savelyeva L., Ziganshin M., Antipin I., Sidorov V.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

A series of inclusion compounds prepared by saturation of the solid adamantyl[4]calixarene (host 1) with vaporous organic guests at 298 K was studied by thermal gravimetry and static headspace GC analyses. The sorption isotherms of guests by host 1, the stoichiometry of the guest-host inclusion compounds, and the Gibbs energies of their formation were determined. The data obtained give evidence of the molecular recognition of the guest shape by host 1. Hence, compound 1 can be used in sensors for recognizing volatile organic compounds with no strong hydrogen or donor-acceptor bonds involved.

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Keywords

Adamantylcalix[4]arene, Clathrates, Headspace gas-chromatographic analysis, Host-guest inclusion compounds, Sorption isotherms, Thermogravimetry