The host compound trans-9,10-dihydroxy-9,10-bis(p-tert-butylphenyl)-9,10-dihydroanthracene forms inclusion compounds with N,N-dimethylformamide (DMF), dimethylsulphoxide (DMSO) and acetone of the type H$_{n}$A$_{m}$B$_{n}$ (A,B = guests), with n varying integrally from 0 to 4. The structures of these compounds have been elucidated. The DMF-DMSO compounds are all triclinic and crystallise in the space group P-1. They are isosstructural with respect to the host molecules and within the host framework, the guests fill certain sites interchangeably. Where n is odd, one particular site is shared by two different guests, making refinement difficult. There is extensive hydrogen bonding between the host and guests in these structures. This host readily absorbs acetone from the vapour phase and under isothermal conditions the velocity of guest uptake is proportional to the vapour pressure of the guest. We have noted that there is a threshold pressure, $P_0$, below which the reaction does not take place. This phenomenon gives rise to anti-Arrhenius kinetic behaviour in that for a given vapour pressure, the enclathration reaction is slower at higher temperatures. The desorption process follows first order kinetics with an activation energy of 48.4 kJ/mol.

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