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Biomimetic cooperative interactions of dried cross-linked poly(N-6-aminohexylacrylamide) with binary mixtures of solvent vapors

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Abstract

Biomimetic cooperativity of hydration effect and effect of ethanol favorable for binding of bad organic sorbates were observed for their vapor sorption by cross-linked poly(N--aminohexylacrylamide) (PNAHAA) in the absence of liquid phase. The vapor sorption isotherms were determined for these systems by the static method of gas chromatographic headspace analysis at 298 K The hydration above 0.09-0.13 g of H2O/(g of polymer) gives a cooperative increase in the PNAHAA binding affinity for benzene, cyclohexane, dioxane, and propanols up to a level which does not change by further hydration, indicating the polymer antiplasticization. Bad sorbates (dioxane, benzene) were observed to have a biomimetic cooperative influence on the binding of ethanol by the dried PNAHAA. This cooperativity does not occur in ternary systems with good norhydroxylic sorbate acetonitrile. © 2004 American Chemical Society.

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