

Short Communication

The isolation and purification of aliphatic sulphoxides on a strongly acidic cationic exchanger

The preparation of pure sulphoxides, for example for various physico-chemical and kinetic measurements, is in general rather difficult. Even though advantageous methods are described for the oxidation of sulphides to sulphoxides¹, the crude product is always contaminated with the starting material and with the further oxidation product, the sulphone. The separation of liquid sulphoxides from all byproducts by simple distillation is never completely successful, owing to their thermolability. In many cases sulphoxides and sulphones form mixed crystals.

Adsorption on a strongly acidic cationic exchanger Dowex 50 proved suitable for the selective separation of aliphatic sulphoxides. The exchanger was used in the H-cycle and before use it was washed successively with distilled water, ethanol and finally with benzene. A benzene solution of the crude sulphoxide was poured on to the exchanger gel; only one tenth to fifth of the over-all column capacity was used. The column was washed with another portion of benzene. The sulphoxide was desorbed with ethanol, which proved most suitable. The pure sulphoxide was recovered by evaporating the ethanol solution in vacuum at low temperature and vacuum distilling at 10^{-1} torr. The sulphoxide content was followed by iodometric titration². The degree of purity reached was as follows: methyl *n*-butyl, 99.9 %; ethyl *n*-butyl, 99.7 %; *n*-propyl *n*-butyl, 100 %; isopropyl *n*-butyl, 99.8 %; isobutyl *n*-butyl, 99.8 %; *sec.*-butyl *n*-butyl, 99.1 %.

Aromatic sulphoxides and dibenzyl sulphoxide are not adsorbed from benzene solution on to Dowex 50.

The interaction of the sulphinyl group of the sulphoxide with the sulphonyl group of the exchanger is probably due to hydrogen bonding. The sulphoxide-hydrogen affinity has been studied carefully in the past³. A detailed study of the phenomenon described above, from the theoretical point of view, will be reported in a separate paper.

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