

Selectivity by Inclusion

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The separation of liquids with similar boiling points by distillation is inefficient or unusable. Thus the method of selective enclathration becomes an attractive possibility. We have analysed the results of competition experiments carried out between the host Tetraphenylethanediol TPED and picoline isomers, and noted the effects of adding “neutral solvents”. The structures of the host-guest compounds were correlated to the selectivity profiles. We have also investigated the control of guest selectivity by changing the pH of the guest mixture. This was effected in the analysis of the inclusion by TPED of aniline versus benzylamine, and the host binaphthol and its inclusion of substituted quinolines. The results were related to the pK_b values of the liquid bases, and the resulting host-guest structures were elucidated.