

## Investigation of Phase Transfer Catalysis by Employing Quantitative Structure Activity Relationships

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Historically, the application of phase transfer catalysis (PTC) to enantioselective synthesis has been met with limited success. One reason for this limitation is the difficulty of preparing structurally diverse, chiral, non-racemic quaternary ammonium ions. More importantly, the lack of understanding of the structure-activity relationships between an ammonium ion and its ion pair impedes the design of efficient catalysts.

To address these issues, a stereoselective route to a chiral tertiary amines has been employed utilizing the tandem [4+2]/[3+2] cycloaddition of nitroalkenes. The amines serve as scaffolds, which are adorned using parallel synthesis to prepare a library of quaternary ammonium ions. Each ammonium ion catalyst was then screened against a common reaction in order to elucidate any QSAR's in terms of rate and enantioselectivity. The development of the synthetic route and the elucidation of QSAR's for phase transfer catalysis will be presented.

