

SYNTHESES OF HETEROCYCLIC SYSTEMS BY PHOTO-REACTIONS OF PHTHALIMIDES:

PHOTOCYCLIZATION OF N-ALKYLPHthalIMIDES

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The phthalimide system shows photochemical behavior resembling with that of simple carbonyl systems, indicative of reactivity of the excited imide carbonyl groups: reduction, addition and cyclization. The present paper briefly reviews the photocyclization reactions of N-alkylphthalimides as a synthetic approach to various heterocyclic systems.

- (1) The general pattern of the photolysis of N-alkylphthalimides is proposed on the basis of formal analogy with the Norrish type II mechanism.
- (2) Photolyses of N-alkylphthalimides led to syntheses of multicyclic benzazepinones.
- (3) By photocyclization of N- ω -alkoxyalkylphthalimides azacyclopentanol derivatives including an oxazolo[4,3-a]isoindole-1-spiro system were obtained.
- (4) A homologous series of phthalimides possessing a sulfide function undergo, on irradiation, facile photocyclization to afford medium- to large-sized azathiacyclols.

The "photolysis of donor-acceptor pair system" is suggested as a model of a "synthetic control" approach.