

SYNTHESES OF HETEROCYCLIC SYSTEMS BY PHOTO-REACTIONS OF PHTHALIMIDES:

PHOTOCYCLIZATION OF N-ALKYLPHthalIMIDES

Yuichi Kanaoka, Koichi Koyama, and Yoshihiro Migita
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Faculty of Pharmaceutical Sciences, Hokkaido University, Sapporo, 060

Yasuhiko Sato, Hideo Nakai, Hiroshi Ogiwara, and Tomishige Mizoguchi
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Organic Chemistry Research Laboratory, Tanabe Seiyaku, Co., Ltd., Toda, Saitama 335

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 an 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.