

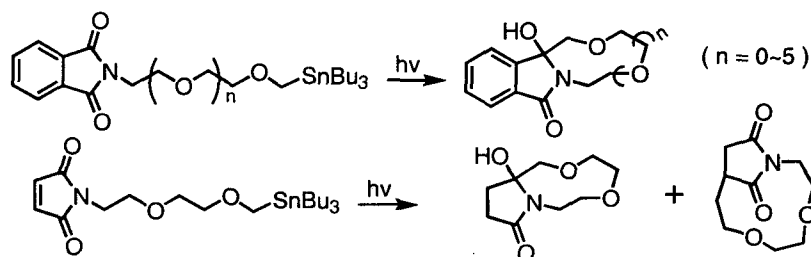
SET-PROMOTED PHOTOCYCLIZATION REACTIONS OF
IMIDES WITH α -STANNYL ETHER APPENDAGES
PRODUCING MACROCYCLIC POLYETHERS

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In a series of earlier studies, we have found that cation radical α -desilylation occurs rapidly when promoted by silophilic solvents (*eg.*, *ROH*) and that this process is the driving force for efficient photocyclization reactions of N-tethered phthalimido α -silyl-amines, -amides, -ethers, and thioethers. Moreover, this SET-induced photochemistry can be used as the key transformation in efficient and selective methods to prepare a variety of macrocyclic polyethers, polythioethers, and polysulfonamides.

Bond strength (BDEC-Sn = *ca.* 50kcal/mol, BDEO-Sn = *ca.* 98kcal/mol) and oxidation potential considerations suggest that photocyclization reactions of phthalimides tethered to α -stannyl-*n*-electron donors should be similarly efficient. Recently we investigated SET-promoted photomacrocyclization reactions of tributylstannyl-terminated phthalimido- and maleimido-polyethers. We found that the excited state cyclization processes, which take place *via* sequential SET-destannation pathways, produce macrocyclic polyethers (68~98%) more efficiently than those involving sequential SET-desilylation routes do. In addition, differences in product distributions obtained from photoreactions of trimethylsilyl- and tributylstannyl-terminated maleimido-polyethers suggest that more than one mechanistic pathway is followed in excited-state reactions of the tin-containing substrates.



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