

IN THE NAME OF GOD

**NEW APPLICATIONS OF ELECTROPHILIC HOLOGENS IN
SYNTHESIS OF ORGANOSULFUR COMPOUNDS**

BY

Abbas Ali Jaafari

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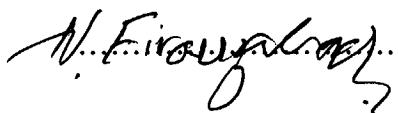
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EVALUTED AND APPROVED BY THE THESIS COMMITTEE AS: EXCELLENT

..... N. Iranpoor, Ph. D., Prof. of Chemistry
(Chairman)

..... H. Firouzabadi, Ph. D., Prof. of Chemistry

..... B. Tamami, Ph. D., Prof. of Chemistry

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Dedicated to

my parents

and

my teachers

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ABSTRACT

NEW APPLICATIONS OF ELECTROPHILIC HALOGENES IN SYNTHESIS OF ORGANOSULFUR COMPOUNDS

BY

ABBAS ALI JAAFARI

In this thesis we have reported a new method for the preparation of thiiranes from epoxides using thiourea/silica gel under solvent-free conditions and in organic solvents. This method is the first reported method for the conversion of R(+)-styrene oxide to R(+)-styrene sulfide that occurs with high retention of configuration.

N-Bromosuccinimide (NBS), N-chlorosuccinimide (NCS), and 2, 4, 4, 6-tetrabromocyclohexadiene-1-one (TABCO) as sources of electrophilic halogens were used for alcoholysis, hydrolysis, and acetolysis of thiiranes to their corresponding β , β' -dialkoxy-, β , β' -dihydroxy-, and β , β' -diacetoxy- disulfides in good to excellent yields.

A catalytic method has also been developed for the efficient conversion of thiiranes to their corresponding dithianes in aprotic solvents using N-bromosuccinimide (NBS), N-chlorosuccinimide (NCS), and 2, 4, 4, 6-tetrabromocyclohexadiene-1-one (TABCO) as catalysts.

The ring opening reactions of thiiranes with acetyl chloride in the absence of catalyst and also in the presence of different Lewis acids were studied. From these reactions, the corresponding β -chloro-thioacetates were obtained in high yields with high regioselectivity.

We also used triphenylphosphinedibromide ($\text{Ph}_3\text{P}/\text{Br}_2$), and triphenylphosphine/N-bromosuccinimide ($\text{Ph}_3\text{P}/\text{NBS}$) as catalysts for thioacetalization of carbonyl compounds with 1,3-propanedithiol and ethanedithiol in CHCl_3 . The corresponding dithianes and dithiolanes were obtained in excellent yields.

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