

CONTENTS

	Page
SUMMARY	
GENERAL PART	
CHEMISTRY OF ORGANIC AZIDES.....	1
Preparation of Azides.....	1
A. (Acid Azides).....	1
I) From Reaction of Acid Chlorides with Sodium Azide.....	1
II) From Diazotization of Acid Hydrazides....	3
B. (Aryl Azides)	4
C. (Carbamoyl Azides).....	5
D. (Vinyl Azides).....	7
E. (Aryl Sulphonyl Azides).....	7
F. (Heterocyclic Azides).....	7
G. (Olefinic Azides).....	8
CHEMICAL REACTIONS OF ORGANIC AZIDES.....	10
I. Decomposition Reactions	10
Mechanism of Thermal and Photochemical Decomposition.....	10
A. Decomposition via Nitrene Intermediates.	11
B. Decomposition Via a Concerted Mechanism.	12
TYPES OF DECOMPOSITION REACTIONS.....	15
1) Thermal Cyclization of Azides.....	15
2) Acid-catalyzed Decomposition.....	20
3) Base-Catalyzed Decomposition of Acid Azides	25
4) Decomposition of Sulphonyl Azides via copper complexes.....	32
II. Addition Reactions	34
1,3-Dipolar Cycloadditions.....	34
A- Addition of Azides to Double Bonds.....	35
1) Addition to Olefinic double bonds....	35
2) Addition to double bonds in isocyanates.	37
3) Addition to Conjugated double bonds..	39
4) Addition to a double bonds in vinyl ethers.....	40
5) Addition to double bonds in enamines.	42
B- Addition of Azides to Triple Bonds.....	44
1) Addition to acetylenic esters.....	45
2) Addition to monosubstituted acetylenes.	45
3) Addition to Ynamines.....	46

(B)

	Page.
ADDITION OF AZIDES VIA NITRENE INTERMEDIATES.....	47
1) Addition to carbon-carbon double bonds.....	47
2) Addition to carbon-carbon triple bonds.....	48
SPECTROSCOPIC STUDY ON ORGANIC AZIDES.....	50
1) Ultra Violet Spectra	50
2) Infrared Spectra.....	50
ORIGINAL WORK	
AIM OF THE PRESENT INVESTIGATION.....	52
I- BASE-CATALYZED DECOMPOSITION OF ACID AZIDES.....	53
1) SYNTHESIS AND MASS SPECTRA OF N-SUBSTITUTED CARBAMOYL BENZIMIDAZOLONES VIA BASE-CATALYZED DECOMPOSITION OF PHTHALOYL-AZIDE.....	53
A- SYNTHESIS OF N-ARYL CARBAMOYL BENZIMID- AZOLONES.....	53
B- SYNTHESIS OF N-AMINO-CARBAMOYL- BENZIMIDAZOLONES.....	72
2) SYNTHESIS AND MASS SPECTRA OF N-ARYL- PHTHALIMIDES VIA BASE-CATALYZED DECOM- POSITION OF ACID AZIDES IN THE PRESENCE OF PHTHALIC ANHYDRIDE.....	76
II- ACID-CATALYZED DECOMPOSITION OF ACID AZIDES.....	84
1) DECOMPOSITION IN A MIXTURE OF POLYPHOSPHORIC/ CARBOXYLIC ACID.....	84
A) Aroyl azides.....	85
B) α,β -Unsaturated acid azide(e.g. Cinnamoyl azide).....	91
C) o-Aroyl-benzazides.....	93
2) DECOMPOSITION IN A MIXTURE OF HYDROBROMIC/ ACETIC ACID.....	98
A) Aroyl Azides.....	98
B) o-Aroyl-benzazides.....	101
I.R., and N.M.R. CURVES	
EXPERIMENTAL	102
REFERENCES.....	123
ARABIC SUMMARY	-

(i)

SUMMARY

Phthaloyl azide (I) was used to prepare N-substituted carbamoyl benzimidazolones (III) via the base-catalyzed decomposition with amines, (II a-g), p-aminobenzoic acid (II h), and hydrazines (II i, and j).

Mass Spectra for (III) were presented, and discussed (cf. Charts 2-4, and 7).

Mass Spectra of benzimidazolone(V), and p-anisylisocyanate(VI c) revealed that they were formed as intermediates during the fragmentation of(III e).

The hitherto unknown reaction of aroyl azides (VII a-e) with phthalic anhydride in pyridine base, was used to prepare N-arylphthalimides (VII a-e). Mass Spectra of(VIII a, b) were presented, and discussed .

A new acid-catalyzed double route decomposition of aroyl azides (VII a-f) in a mixture of (p.p.A./carboxylic acid) gives a mixture of acids (XVII a-f), and anilides (XVIII a-l). Cinnamoyl azide (VII g) under the same conditions gives cinnamic acid (XVII g), and phenyl acetaldehyde.

(ii)

o-Aroyl benzazides (XXVIII a-d) react with (P.P.A./carboxylic acid, or HBr/ACOH acid) to give a mixture of o-aroyl-benzoic acids (XXIX a-d) and aroyl anthranilic acids (XXX a-d) .

The hitherto unknown acid-catalyzed decomposition of aroyl azides in a mixture of HBr/ACOH gives acids (XVII a-e) and amine hydrobromides (XXXII a-e).