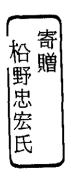


## Studies on Chemistry of Unsaturated Small Ring Systems Consisting of Silicon Atoms

## Tadahiro MATSUNO

A dissertation submitted to the Doctoral Program in Chemistry, the University of Tsukuba in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Science



January 2004

## **Contents**

General Introduction		1
Chapter 1		11
Synthesis, Structure and Reactivity of Cyclotrisilene:		
A Three-Membered Ring Compound with a Si-Si Double I	Bond	
Chapter 2		55
The Homocyclotrisilenylium Ion: A Free Silyl Cation in the	Condensed Phase	
Chapter 3		81
Cyclotetrasilenyl and Cyclotetrasilenide:		
A Reversible Redox system of Cyclotetrasilenyl Cation, Ra	dical, and Anion	
Chapter 4		117
Photochemical Isomerization of 1,2,5-Trisilabicyclo[3.2.0]	hepta-3,6-diene	
to 1,4,7-Trisilabicyclo[2.2.1]hepta-2,5-diene		
Chapter 5		133
Synthesis and Structure of 1,2,6-Trisila-5-germabenz	valene and Its	
Isomerization to 1,2,5-Trisila-6-germabenzvalene		
Chapter 6		150
Synthesis and Structure of the First Heavy Cyclobuta	idiene Dianion	
Consisting of Silicon Atoms		
List of Publications		176
Acknowledgment		177