ABSTRACT

SYNTHESIS AND CHARACTERIZATION OF THE HETEROCIYCLIC MONOBORANE AND DIBORANE COMPOUNDS

Hakan Can SÖYLEYİCİ

M.Sc. Thesis, Department of Chemistry
Supervisor: Prof. Dr. Yüksel ŞAHİN
2014, 145 pages

The diborane (4) compounds are subjects that have been working in many studies for a long time. Nevertheless, ıts currently investigating in new areas that have retained actuality. Five-membered heterocyclic boron compounds are a subject that have many studies due to their stability. However, studies about six-membered structure is quite limited in this area. Within the scope of this thesis, especially this type of compounds have been studied and carried out with succesfull results. Boron compounds known for a long time in the transamination reaction, though there are no studies with single product and high yield. Within the scope of this thesis highly efficient and one type diborane (4) compounds were obtained as a result of transamination reactions.

In conclusion, the thesis has been studied under four main headings; types of diboranes containing five-membered heterocyclic groups, cyclohexane derivative diazaborinanes, cyclohexane derivative diazadiborinanesand diborane compound with bicyclic structures are studied. Most of these groups which are synthesized within the scope of this thesis are new species with no sample or very recently entered in the literature. As a result of the synthesis fourteen novel compounds with four different types have been provided literature in the field of boron chemistry. All the synthesis were performed in inert atmosphere with the kinetic-thermodynamic controled reactions. Synthesised compounds were characterized by NMR, IR, MS and X-Ray techniques in inert atmosphere.

Keywords: Diborane (4), heterocyclic chemistry, transamination, diazaborinane, diazadiborinane, diazaborol