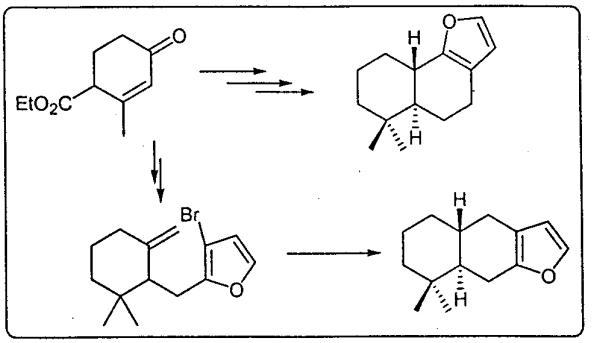
ABSTRACT

The marine natural products offer attractive settings in which science of organic chemistry can be put to crucial tests. A truly elegant synthesis in this context is a major advancement in that it epitomizes how an imaginative mastery of the course of organic reactions can achieve a sophisticated objective by an economy of operations.

Investigations in this dissertation entitled "*Synthetic Studies Towards Furoterpenes and Novel Palladium-catalyzed Cycloisomerization for Cycloalkenone Synthesis*" are primarily an effort towards the development of new synthetic strategies for the cycloalkenone compounds, which could further be converted to furosesquiterpenes of marine origin.

Angularly fused and also linearly fused ABC core structures of furosesquiterpenes have been synthesized starting form cyclohexenone derivatives.

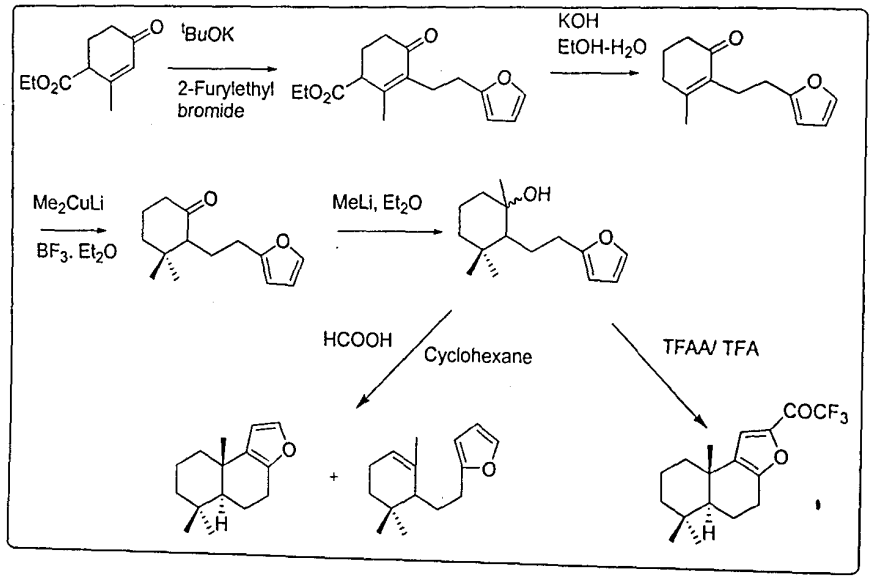


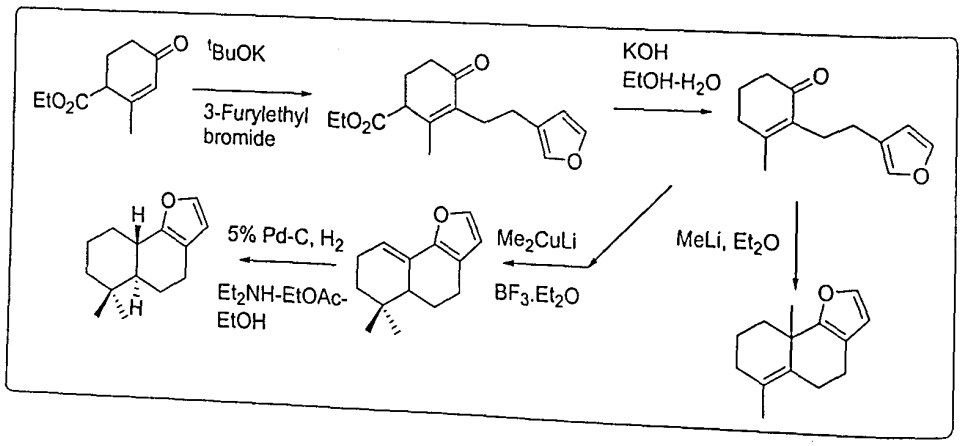
We have developed a flexible and concise route for the synthesis of fused bicyclic cycloalkenones from alkylated bromoallyl alcohols through a palladium catalyzed domino process.

The deliberations are presented in three major chapters:

Chapter 1. ***Synthetic studies towards angularly fused furoterpenes from cycloalkenone derivatives***

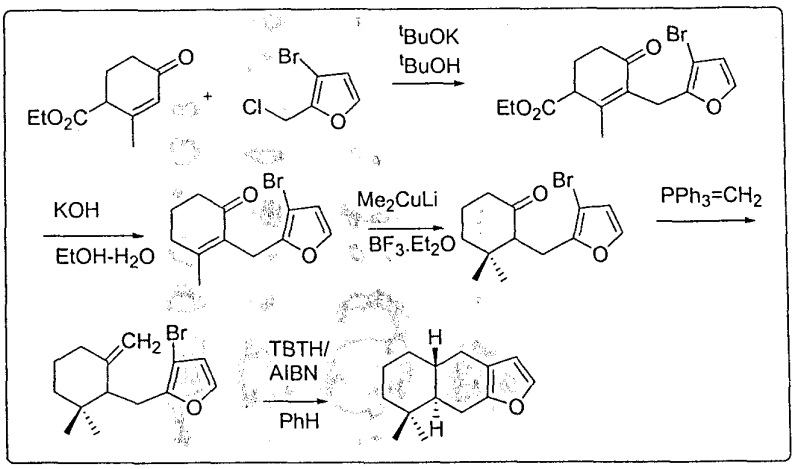
This chapter describes the synthesis of a common cyclohexenone intermediate towards the synthesis of angularly fused tricyclic furosesquiterpenes and their analogues.





Chapter 2. ***Construction of linearly-fused furo[2,3-b] and furo[3,2-b]decalin systems via radical and cationic cyclization***

This chapter describes a formal synthesis of linearly fused ABC tricyclic furoterpene frameworks by radical as well as cationic cyclization.



Chapter 3. ***Palladium catalyzed novel cycloisomerization: an unprecedented domino oxidative cyclization towards cycloalkenones***

A novel palladium catalyzed cycloisomerization route to carbocycles has been described.