

CHAPTER I

INTRODUCTION

Recently, polybenzoxazine has been studied extensively by Ishida et al. as a potentially very useful thermosetting resins due to many favorable physical and mechanical properties. These properties include near-zero shrinkage, high moduli, low water absorption, high glass transition temperature, and flame retardance property.

The interesting point of polybenzoxazine is extended again, when Ishida and Chirachanchai focused on the chemical structure of polybenzoxazine repeating unit and proposed as a novel type of host-guest, or inclusion compound. A research was conducted to study on polybenzoxazine and its monomer as a host compound of which the results are proven to show inclusion phenomena with some metal ions. It is concluded that host-guest system is formed via the molecular assembly which makes the polybenzoxazine or monomer arrange itself and provide the concave structure for metal ions. However, in the initial work, it is still unknown about the mechanism of ion entrapment and the role of the structure of benzoxazine.

The present work is a further step to focus on the inclusion phenomena of benzoxazine in order to clarify the relation between host structure and the induced molecular assembly. Here, benzoxazine monomer derivatives with different groups on the ortho position of phenol ring are prepared. The obtained monomers are applied for ion extraction experiments which are analyzed by ultraviolet-visible spectrophotometer and atomic absorption spectrophotometer.