INTRODUCTION

The design of new ferroelectric mesogens for second harmonic generation is somewhat the holy grail of our research in the field of liquid crystals. The use of computations that predict theoretical models coupled with experiments enable us to determine relationships between molecular structures and the properties of materials. Employing this paradigm facilitates the proposal of new liquid crystalline candidates with improve properties for non-linear optic applications. In order to design new ferroelectric liquid crystals it is imperative to understand the factors that stabilize the SmC phase and therefore also stabilize a chiral SmC (SmC*) phase.

This poster focuses on a systematic study of the relationships between certain molecular parameters and the thermal stabilization of the SmC phase. The first series of homologs were synthesized and characterized by a former group member, M.-A. Beaudoin M.Sc. These were achiral bisesters.1) The goal of my project is to substitute an ester with a sulfinate ester in order to compare the liquid crystalline polymorphism of these two series of mesogens. Both series were studied using the intermediate of the bis(ester) series and the sulfinate ester series.

The use of computations that predict theoretical models coupled with experiments enable us to determine relationships between molecular structures and the properties of materials. Employing this paradigm facilitates the proposal of new liquid crystalline candidates with improve properties for non-linear optic applications. In order to design new ferroelectric liquid crystals it is imperative to understand the factors that stabilize the SmC phase and therefore also stabilize a chiral SmC (SmC*) phase.

This poster focuses on a systematic study of the relationships between certain molecular parameters and the thermal stabilization of the SmC phase. The first series of homologs were synthesized and characterized by a former group member, M.-A. Beaudoin M.Sc. These were achiral bisesters.1) The goal of my project is to substitute an ester with a sulfinate ester in order to compare the liquid crystalline polymorphism of these two series of mesogens. Both series were studied using the intermediate of the bis(ester) series and the sulfinate ester series.

Strong relationships have been established for these two molecular parameters. Interestingly we were able to demonstrate important similarities between the two series.

PRESENT WORK - ACHIRAL BISESTER SMECTOGENS

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.

The SmC phase first arises from the homologs with two anti-parallel esters (ocC). As the aliphatic side chains are lengthened, the thermal stability of the SmC phase increases and the potential for the homologs with the parallel esters (Coc) to exhibit the SmC phase seems to increases as well. On the other hand, there is a decrease in the thermal stability of the liquid crystalline phases.