

## **PREFACE**

Molecular imprinting techniques have proved to be a highly accessible method for producing molecule-specific recognition materials for a variety of applications ranging from sensing to catalysis and separations. Molecular recognition can be defined as the ability of a polymer to interact with the designated targets usually amidst a vast range of other molecules some of which may look almost identical to the target. One of the main advantages of the molecular imprinting approach is the speed and ease with which they can be obtained compared with biologically derived antibodies which can take up to a year to obtain and may not be obtained at all in some cases. The favorable physical and chemical robustness of molecular imprinted polymers (MIPs) allow these artificial ‘antibodies’ to be used under harsher conditions such as in organic solvents, at pH extremes, high pressures and elevated temperatures where biological macromolecules are often denatured. MIPs therefore have potential applications in the areas of separation, trace analysis, assays, biomimetic sensors, chemical synthesis and others.

The work presented in this thesis aims at the tailoring of imprinted polymers for the specific and selective recognition of N-protected amino acid and to exploit the specificity and selectivity of the successful system for the selective binding of the enantiomers of amino acid derivatives. Many studies aimed at optimizing non-covalent imprinting has been reported in the literature. The majority of these have been chromatographic studies, the goal of which has been to produce stationary

phase with enhanced performance. Here we present an alternative simple UV-vis spectrometric technique for the designing of molecular imprints for the specific and selective recognition of amino acid derivatives. The attempts made in this work led to the successful design of molecular imprinted polymers of the selected templates. With the significant advantages in easy preparation, low cost, predictable specific recognition, and high stability, the synthesized molecularly imprinted polymers have the capability of specific adsorption and recognition of the template molecule. Considering the versatility and high level of specificity and recognition that can be achieved the future of these materials is very promising.