

# CHAPTER 1

## INTRODUCTION

### 1.1 Scientific Rationale

Flexographic printing is today in regular competition with other printing processes, therefore print quality has to be improved and maintained at a constant level. Of many types of inks available, UV flexo inks are being used widely today for high quality applications such as the printing of labels because of their many advantages such as improve color consistency, better adhesion, operator friendly, less clean-up, less waste and no VOC's. However, the reactive acrylates of UV inks have significant effects on characteristics of photopolymer plates.<sup>1</sup> To understand an actual UV flexo ink performance on press, an information about relationships between photopolymer plate and the UV flexo ink is needed.

### 1.2 Objectives of the research work

1. To elucidate effects of UV flexo ink on photopolymer plate 's properties.
2. To elucidate effects of the changing characteristics of the plate on print quality.

### **1.3 Scope of the research work**

This research involves the elucidation of the effect of UV flexographic ink on photopolymer plate's physical characteristics and how it affects the print quality of the printed image. The stability of each ink/plate combination in both static and dynamic condition is evaluated. The relationship between the plates' changing characteristics and the quality of the printed image will be made.

### **1.4 Content of the research work**

This thesis consists of 5 chapters including introduction, theoretical background and literature review, experiment, results and discussion, and conclusion and suggestions. Chapter 2 displays in brief about the principle of flexographic process, photopolymer plate, plate making, UV flexo inks and some short literature review of some previous works. In chapter 3, the details about the materials, apparatus and procedure of this research are examined. Chapter 4 presents the result and discussion of the effect of UV flexo inks on photopolymer plate, the effect of the changing characteristics of the plate on the print quality. Moreover, the relationship between print quality and some printing substrates is also included.