

Spectroscopy Analysis of the Ring Opening Reaction in Functionalized Spiropyran Films

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ABSTRACT

In this work we used the Fourier Transform Infrared spectroscopy and UV/Vis spectroscopy to analyze the behaviour of self-ensemble films of spiropyran when the films were irradiated by UV. In UV/Vis spectroscopy is possible observe the generation of the absorption peak, at 575 nm, associated to the merocyanine state when the ring-opening process is induced by UV light. In ATR the kinetics of the ring-opening was determinate too; following the spectra changes in real time.

INTRODUCTION

Actually, the design and generation of organic materials in compact and order arrays, is one of the goals of many researchers groups [1]. The most important of this, it is the development of surfaces generation protocol, which increases their value with all applications that can be conceived. The main applications can be: superficial organic reactions [2-3], studies of electronic transfers' process [4-5], electrochemical or optical sensors for molecular recognition [6-8], nanometric design of electronic devices [9-10], etc.

By the other hand, the increase and demand of information induces to the electronics and information industries to require materials with high optical properties. Since the discovery of the spiropyrans photochromic reactions in 1952 by Fisher and Hirshberg [11], the interest in the use of spiropyran dyes, for photoelectric and photoelectrochemical devices, has been increasing. The spiropyrans have been the most extensively photochromic material studied over the past decades.

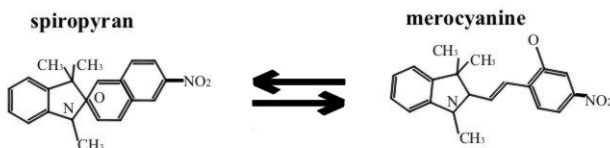


Figure 1. Schematic molecular structure of the sample before the UV illumination and after the isomerization. The process is reversible under visible illumination.