MACROSCOPIC PHOTOSYNERGETICS SYSTEMS: PHOTOMECHANICAL THIN FILMS BASED ON SUPRAMOLECULAR ELASTOMER - DITHIENYLETHENE ASSEMBLIES

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Within the framework of molecular photoactuator, we investigate a novel system based on a mixture between an ureidopyrimidinone functionalized dithienylethene [1,2] (denoted by A) and an ureidopyrimidinone functionalized poly(ethylene-co-butylene) thermoplastic elastomer[3] (denoted by B). In chloroform, the A – B system leads to a supramolecular assembly where the subunits are connected to each other via quadrupole hydrogen bonding as detailed in figure 1. According to spin coating technics, it has been found that the macroscopic shape of the resulting thin films can be modified by switching between UV and Visible light.

Based on extensive combination of experimental technics and modeling, our strategy consists to establish a correlation between the photochemical, structural, and mechanical properties responsible for the drastic macroscopic deformations. During this presentation, we will focus on the interplay between the elaboration method and the photomechanical efficiency.

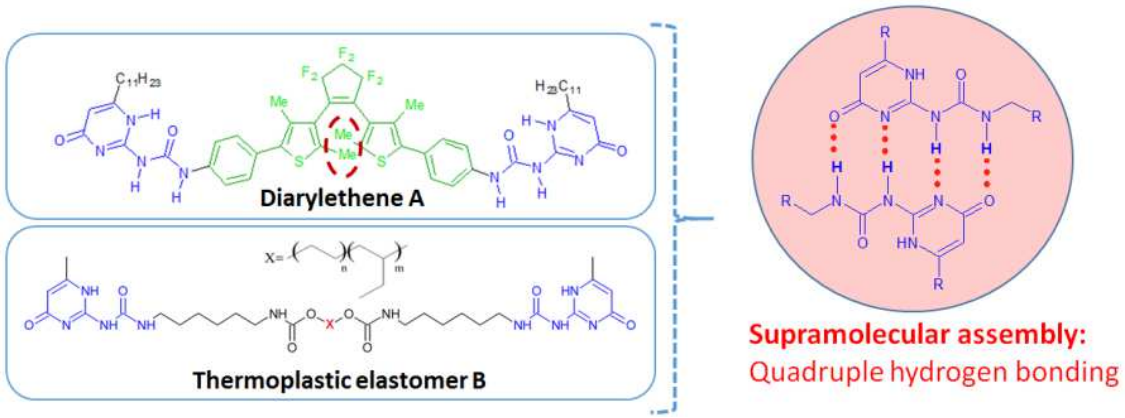

Figure 1 – Diarylethene A and elastomeric units B; **b)** Quadrupole hydrogen bondings able to link as A-A, B-B or A-B.

References:

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