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# Synthesis and Characterization of Photo-activatable Systems

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Light responsive molecular materials constitute an extremely active research field driven by the significant progresses conducted in a wide panel of applications such as light displays (OLEDs), optoelectronics (OFETs), bio-imaging [1] and light conversion (solar cells, photo-catalysis).[2] In the particular case of data storage, the strategy proposed is based on the preparation of a molecular material that display stable and light-activatable nonlinear optical (NLO) responses and/or luminescence properties. The material will be formed by a monolayer of chromophores grafted on a surface, through alkyne-azide click chemistry. The combination with a photochromic unit will allow a reversible light triggered reaction to write, store and read information with light as unique external stimulus due to its easy and contactless application. Diarylethenes (DAEs) are among the most commonly used classes of photochromic compounds *(Figure 1)*. Especially, dithienylethene (DTE) are known for their excellent thermal stability and fatigue resistance. [3] The general design of the targeted chromophores is divided into three parts: an anchoring function, a linker and the photo-active unit. These chromophores can be organic [4] or organometallics.

a)

b)

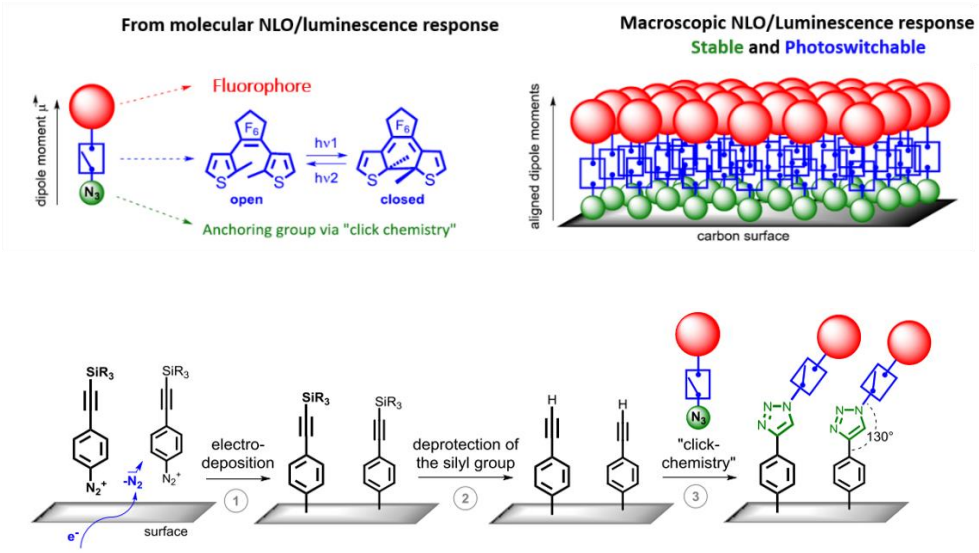


Figure 1. General molecular design(a) and the grafting methodology(b).

In this presentation, I will illustrate the synthetic approach of formation of photo-switchable molecular material symbolized by the diarylethene moiety terminated with azide terminal group and their grafting results will be clearly discussed. Moreover, a fluorophore will be inserted to DTE framework inorder to regulate the luminescence properties upon photochromism.

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