

Photochromic and electrochemical properties of
bi-diarylethene molecules with tetrathiafulvalene
as bridge unit

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Abstract: We design and synthesis a new type of TBT-TTF molecule, and the structure contains two diarylethene units which have photochromic characteristics both. When study its spectral properties, we found that TBT-TTF switch process has two characteristics: first, the reaction is relatively slow. In holographic storage, this feature can reduce the information loss of the molecules at edge of light beam due to the high sensitivity response to light, and can improve the stability and fatigue resistance of data storage; the second is that photochromic reaction is accompanied by aggregation. The difference of refractive index before and after aggregation can be much bigger than the structure change of single-molecule itself, which means the modulation amplitude of refractive index increases, so that the sensitivity of holographic storage will be improved.

Key words: diarylethene, photochromic, electrochemical properties aggregation