

Abstract Submitted
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Influence of ligand and environment substitution on photo-triggered linkage isomerization of photochromic ruthenium sulfoxide complexes¹ KRISTIN SPRINGFELD, VOLKER DIECKMANN, SEBASTIAN EICKE, MIRCO IMLAU, Department of Physics, University of Osnabrueck, Osnabrueck, Germany — The group of ruthenium polypyridine sulfoxides features a pronounced photochromism in the UV/VIS spectral range based on an ultra-fast photo-triggered linkage isomerization located at the SO-ligand. This isomerization exhibits a tremendous photosensitivity and a high thermal stability of the two metastable structural isomers. Here, we discuss the characteristic photochromic properties of the compounds in the frame of ligand substitution and the replacement of the dielectric environment. The complex $[\text{Ru}(\text{bpy})_2(\text{ROSO})]\cdot\text{PF}_6$ [1] (with OSO: 2-methylsulfinylbenzoate) has been modified with the groups $\text{R} = \text{H}, \text{Bn}, \text{BnCl}$ and BnMe [2] and studied in different solvents as well as in polydimethylsiloxane. The analysis is performed by cw-pump-probe technique as a function of temperature and exposure. Our results reveal a selective adjustability of the thermal stability in the compounds, while the photosensitivity and the characteristic absorption spectra remain unchanged. We discuss the impact of sulfoxide compounds with the desired features in view of application in molecular photonic devices.

[1] V. Dieckmann et al., Opt. Express 17, 15052 (2009)

[2] V. Dieckmann et al., Opt. Express 18, 23495 (2010)

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