

Publication

Accumulation of Four Electrons on a Terphenyl (Bis)disulfide

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 4652079

Author(s) Schmid, Lucius; Fokin, Igor; Brändlin, Mathis; Wagner, Dorothee; Siewert, Inke; Wenger, Oliver S.

Author(s) at UniBasel [Wenger, Oliver](#) ; [Schmid, Lucius](#) ; [Brändlin, Mathis](#) ; [Wagner, Dorothee](#) ;

Year 2022

Title Accumulation of Four Electrons on a Terphenyl (Bis)disulfide

Journal Chemistry - A European Journal

Volume 28

Number 72

Pages / Article-Number e202202386

The activation of N₂, CO₂ or H₂O to energy-rich products relies on multi-electron transfer reactions, and consequently it seems desirable to understand the basics of light-driven accumulation of multiple redox equivalents. Most of the previously reported molecular acceptors merely allow the storage of up to two electrons. We report on a terphenyl compound including two disulfide bridges, which undergoes four-electron reduction in two separate electrochemical steps, aided by a combination of potential compression and inversion. Under visible-light irradiation using the organic super-electron donor tetrakis(dimethylamino)ethylene, a cascade of light-induced reaction steps is observed, leading to the cleavage of both disulfide bonds. Whereas one of them undergoes extrusion of sulfur to result in a thiophene, the other disulfide is converted to a dithiolate. These insights seem relevant to enhance the current fundamental understanding of photochemical energy storage.

Publisher Wiley

ISSN/ISBN 0947-6539 ; 1521-3765

edoc-URL <https://edoc.unibas.ch/92099/>

Full Text on edoc Available;

Digital Object Identifier DOI 10.1002/chem.202202386

PubMed ID <http://www.ncbi.nlm.nih.gov/pubmed/36351246>

ISI-Number 000880377200001

Document type (ISI) Journal Article