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Charge transport in single photochromic molecular junctions YOUNGSANG KIM, T. PIETSCH, ELKE SCHEER, Department of Physics, University of Konstanz, Germany, T. HELLMUTH, F. PAULY, Institute for Theoretical Solid State Physics, Karlsruhe Institute of Technology, Germany, D. SYSOIEV, T. HUHN, T. EXNER, U. GROTH, U. STEINER, Department of Chemistry, University of Konstanz, Germany, A. ERBE, Helmholtz-Zentrum Dresden Rossendorf, Germany — Recently, photoswitchable molecules, i.e. diarylethene, gained significant interest due to their applicability in data storage media, as optical switches, and in novel logic circuits [1]. Diarylethene-derivative molecules are the most promising candidates to design electronic functional elements, because of their excellent thermal stability, high fatigue resistance, and negligible change upon switching [1]. Here, we present the preferential conductance of specifically designed sulfur-free diarylethene molecules [2] bridging the mechanically controlled break-junctions at low temperatures [3]. The molecular energy levels and electrode couplings are obtained by evaluating the current-voltage characteristics using the single-level model [4]. The charge transport mechanism of different types of diarylethene molecules is investigated, and the results are discussed within the framework of novel theoretical predictions.

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Youngsang Kim
Department of Physics, University of Konstanz, Germany

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