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Electronic spectrum and orbital filling in a single-molecule junction EDGAR A. OSORIO, KEVIN O'NEILL, Delft University of Technology, MAARTEN WEGEWIJS, RWTH Aachen, NICOLAI STUHR-HANSEN, JENS PAASKE, THOMAS BJORNHOLM, University of Copenhagen, HERRE VAN DER ZANT, Delft University of Technology — We study single-electron tunneling in three-terminal devices in which a single molecule bridges the gap between source and drain electrode. The molecular devices are made by electromigration and at low temperatures excitations appear in the stability diagram. For the OPV-5 molecule more than fifteen different excitations are visible, of which twelve match RAMAN spectra and the remaining ones are due to vibrations of the molecule attached to gold electrodes at energies below 10 meV. Similar to carbon nanotubes, the observation of a singlet-triplet transition allow us to determine the orbital filling and spin configuration of the molecule.

Edgar A. Osorio
Delft University of Technology

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