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Nanoscale Metal-molecule contacts ARTUR ERBE, SIMON VERLEGER, BERND BRIECHLE, FB Physik, Universitaet Konstanz, Germany — Studies of the influence of the metallic contacts to the electronic transport through single or a few molecules are reported. In order to separate these influences from intrinsic molecular properties we use a number of different, versatile contacting methods. The tested molecules vary from nominally insulating molecules to molecules with conjugated charge systems. It is important that the coupling of the molecules to the electrodes is mechanically and electronically stable throughout the experiment. As a first step two different structures allowing for the change of the mechanical coupling will be analysed to find an optimal configuration. On the one hand a mechanically controllable break-junction (MCB) technique will be studied, on the other a shadow evaporation technique based on a silicon structure will be tested. Transport through the molecules can be investigated at different temperatures. First results indicate that the interplay between the metallic electrodes and the molecules depends strongly on the coupling of the electrodes to the molecules and on the packing of the molecules on the metallic substrates.

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