Abstract Submitted
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Room-temperature gating of molecular junctions using few-layer graphene nanogap electrodes[1] AMELIA BARREIRO, FERRY PRINS, JUSTUS RUITENBERG, JOHANNES SELDENTHUIS, Kavli Institute of Nanoscience, TU Delft, NURIA ALIAGA-ALCALDE, ICREA, Universitat de Barcelona, LIEVEN VANDERSYPEN, HERRE VAN DER ZANT, Kavli Institute of Nanoscience, TU Delft, KAVLI INSTITUTE OF NANOSCIENCE, TU DELFT COLLABORATION — We report on a new method based on feedback controlled electroburning to controllably form nanogaps in few-layer graphene [1]. The gaps have separations on the order of 1-2 nm as estimated from a Simmons model for tunneling. Furthermore, molecules are deposited in the nanogaps. These molecular junctions display gateable IV-characteristics at room temperature. Gateable transport through molecules contacted between the electrodes demonstrates the potential of room-temperature operation of our molecular devices. Combined with the observed stability in time, our study shows that few-layer graphene nanogaps are an interesting alternative to metal electrodes. [1] Ferry Prins, Amelia Barreiro, Justus Ruitenberg, Johannes Seldenthuis, Núria Aliaga-Alcalde, Lieven Vandersypen, Herre van der Zant, Nanoletters 11 (2011) 4607 - 4611

[1]Fundamental Research on Matter (FOM)

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