

Supporting Information

Scanning Electron Microscope large area images

Current image obtained with the AFM after the grain analysis with the Nanotec software

Typical IV curves for until the dielectric breakdown for as-received and graphene coated tips

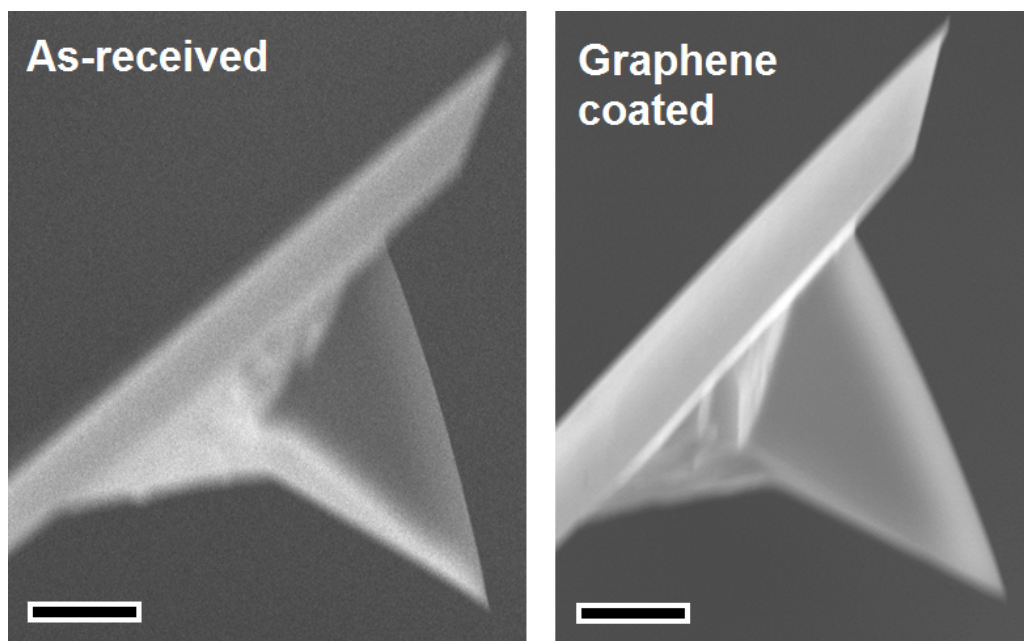


Figure S1: Large area SEM images of both as-received and graphene-coated tips. The images show similar sizes and shapes. Even if the resolution of our SEM tool is not enough to display the tip apex, large PMMA contamination cannot be observed. The scale bar in each image is 4 μm .

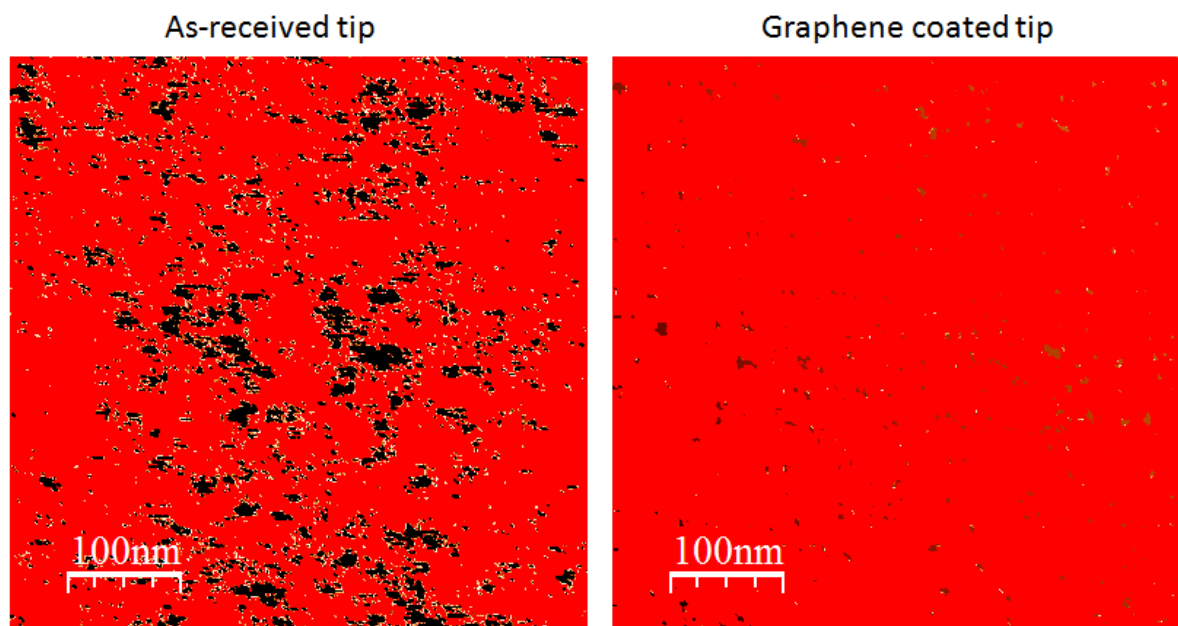


Figure S2: Current images treated with the grain analysis tool of the AFM software from Nanotec. The current of 0.5 pA (just above the electrical noise level of the CAFM preamplifier) and a minimum spot size of 20 nm² (again to avoid the consideration of noise effects)

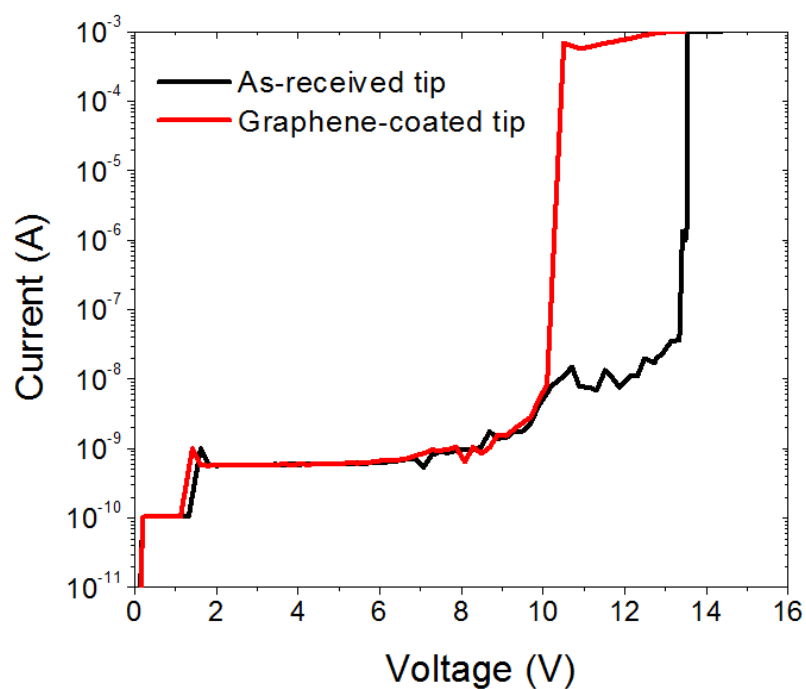


Figure S3: Typical IV curves recorded with the CAFM on the high-k/Silicon sample using both as-received and graphene-coated tips.