Supplementary Data for article

Gas Sensing Performance at Room Temperature of Nanogap Interdigitated Electrodes for Detection of Acetone at Low Concentration

The response of the sensor towards water (humidity) was measured by consecutive up and down ramps of humidity. Here, one ramp from 5 to 55 %RH was done in 30 minutes. **Figure S1** shows two curves going up in humidity and two going down. The figure clearly shows some hysteresis. For increasing humidity, the capacitance shows a linear increase with humidity. The slope of the curve was fitted to 0.15 fF/%RH, with an r^2 of 0.999. When decreasing humidity, the capacitance also decreased, but slower than expected based on the upward curve.

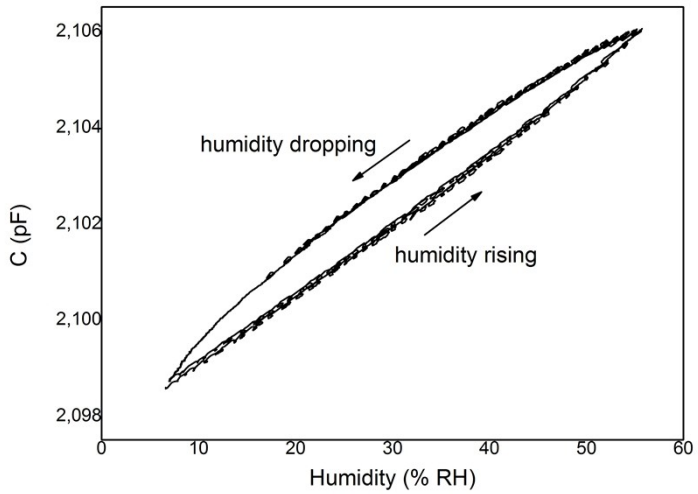

Figure S1. Capacitance as a function of humidity for a nanogap sensor coated with PVPH. Two upward and two downward curves are displayed.

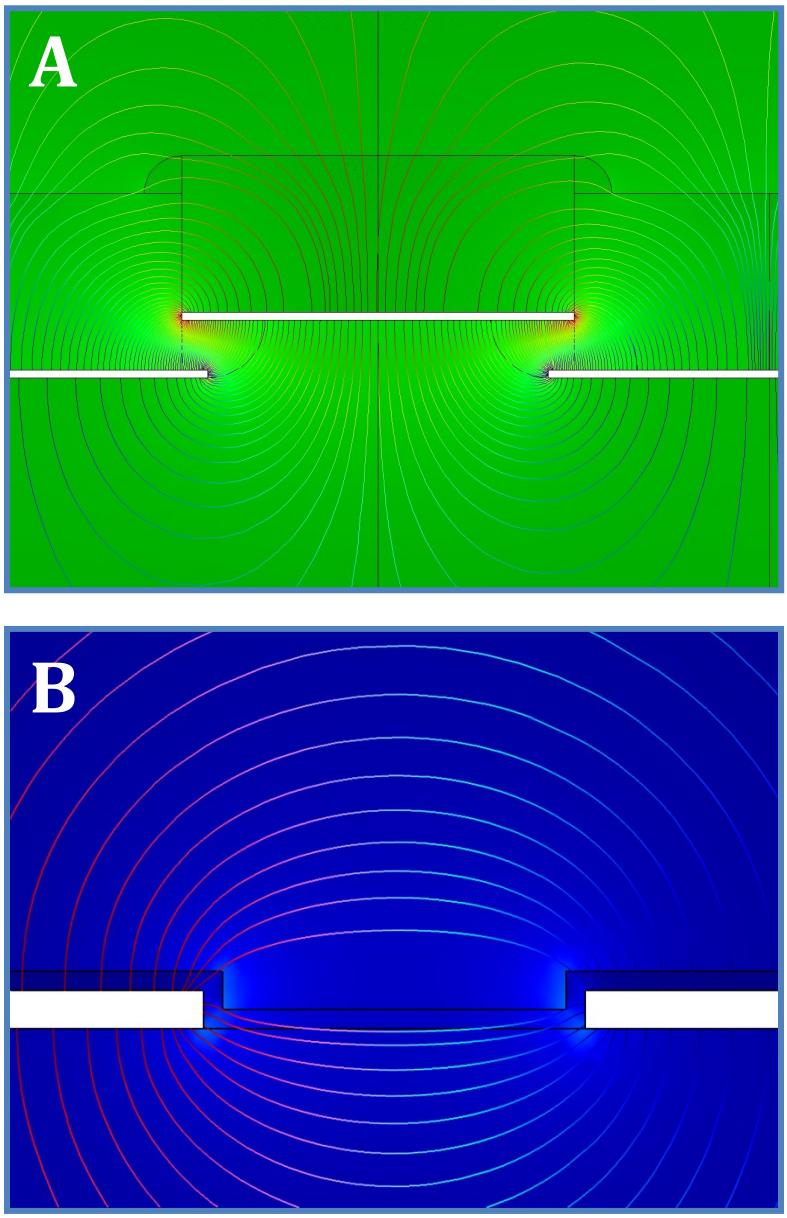

Figure S2: Electric field intensity (color map), electric field lines and potential (color map on lines) composed of two electrodes (white) covered in a polymer film, supported by silicon nitride, in air environment. Left: a typical nanogap capacitor (250nm vertical spacing, 130nm horizontal overlap, 800nm polymer thickness). Right: a typical micro-IDE (10 μm x 0.1 μm x length, 1 μm spacing). The color maps have the same scale: the maximum field intensity inside the nanogap is a factor of ~3 higher and the volume is much larger.

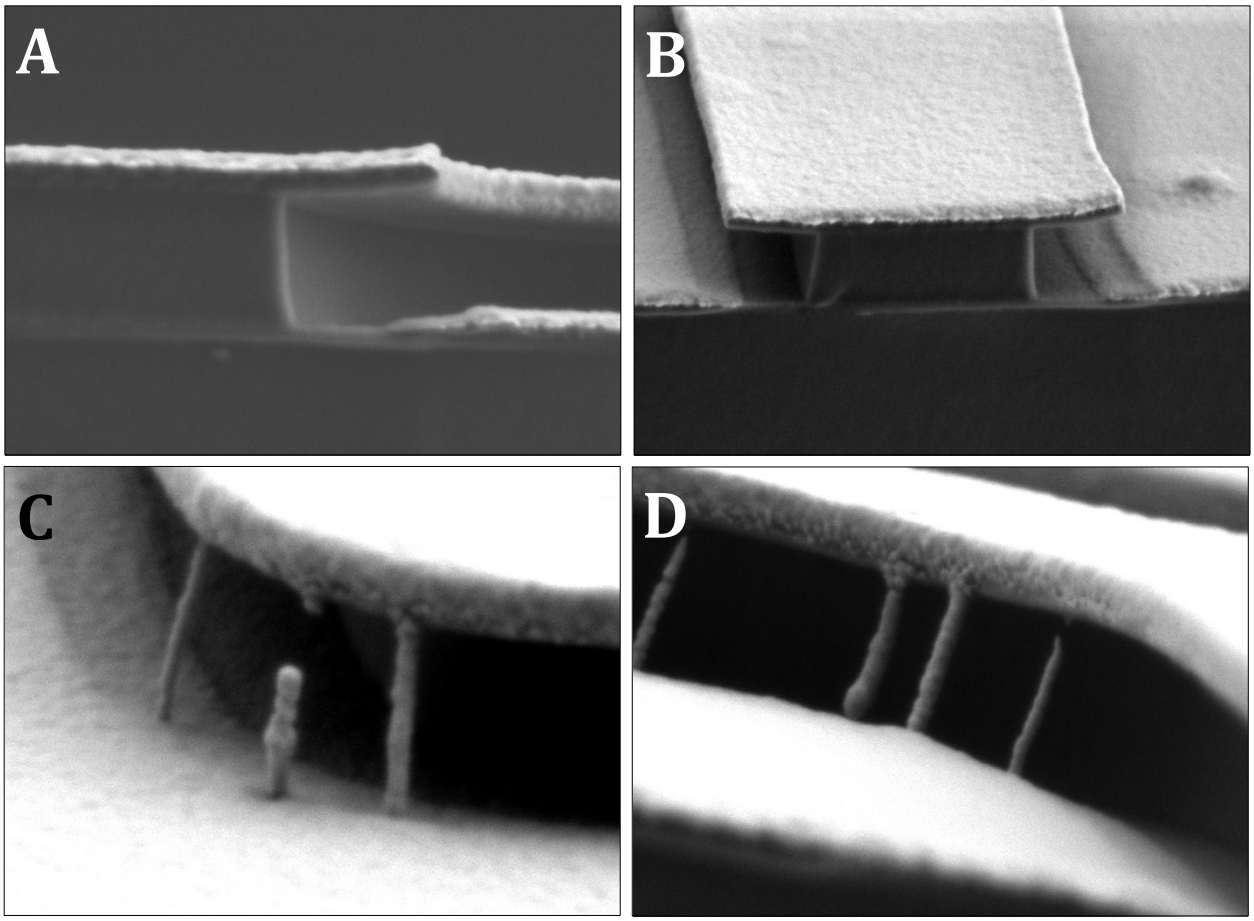

Figure S3: SEM images of cross-section at a pair of electrodes shown nanogap: Side view – (A) and top view at an angle of 60 degree – (B). Close-up SEM images of several defects during nanogap IDEs fabrication process that leads to capacitive short-circuits of the devices, thus production yield decreases at larger scale.