Electronic Supplementary Material (ESI) for Nanoscale
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Supporting information

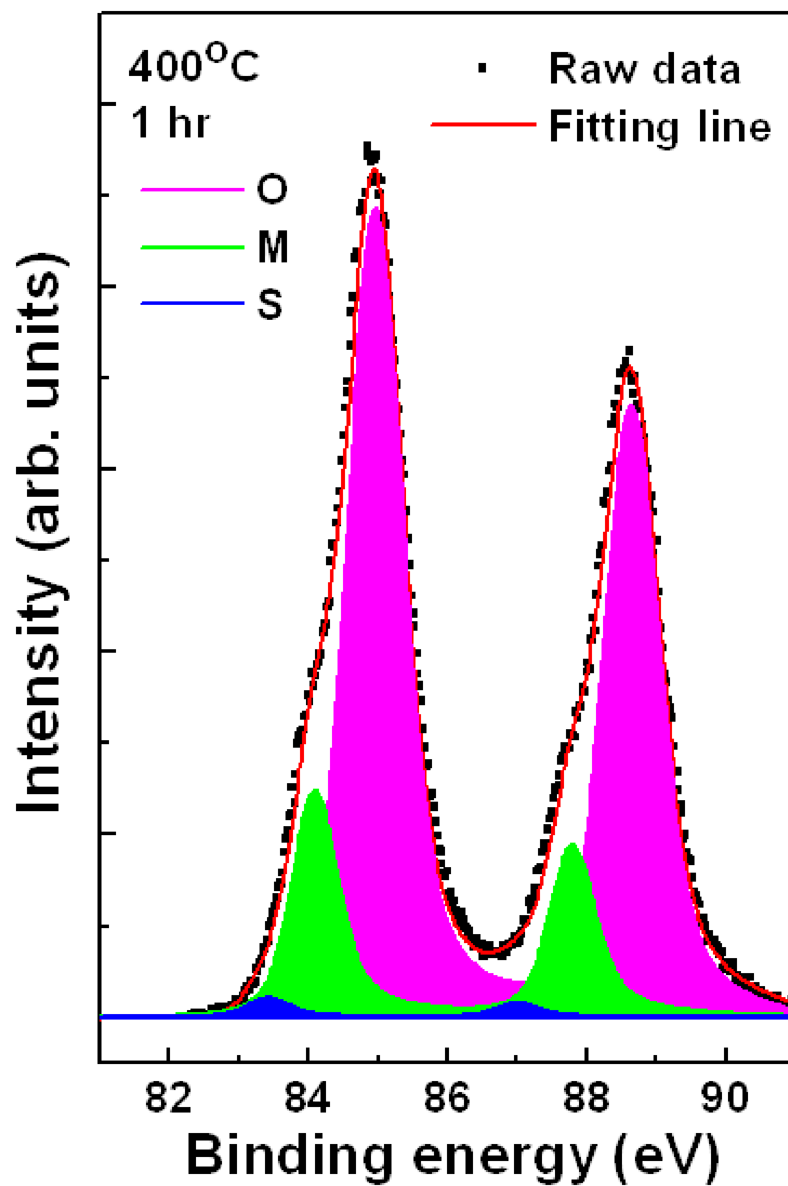

Figure S1. Curve fitting of the Au 4*f* core level spectrum after 1 hr of annealing at 400 °C (at P1) for a Gaussian width of 0.72 eV, a Lorentzian line width of 320 meV, and an asymmetry factor of 0.05.

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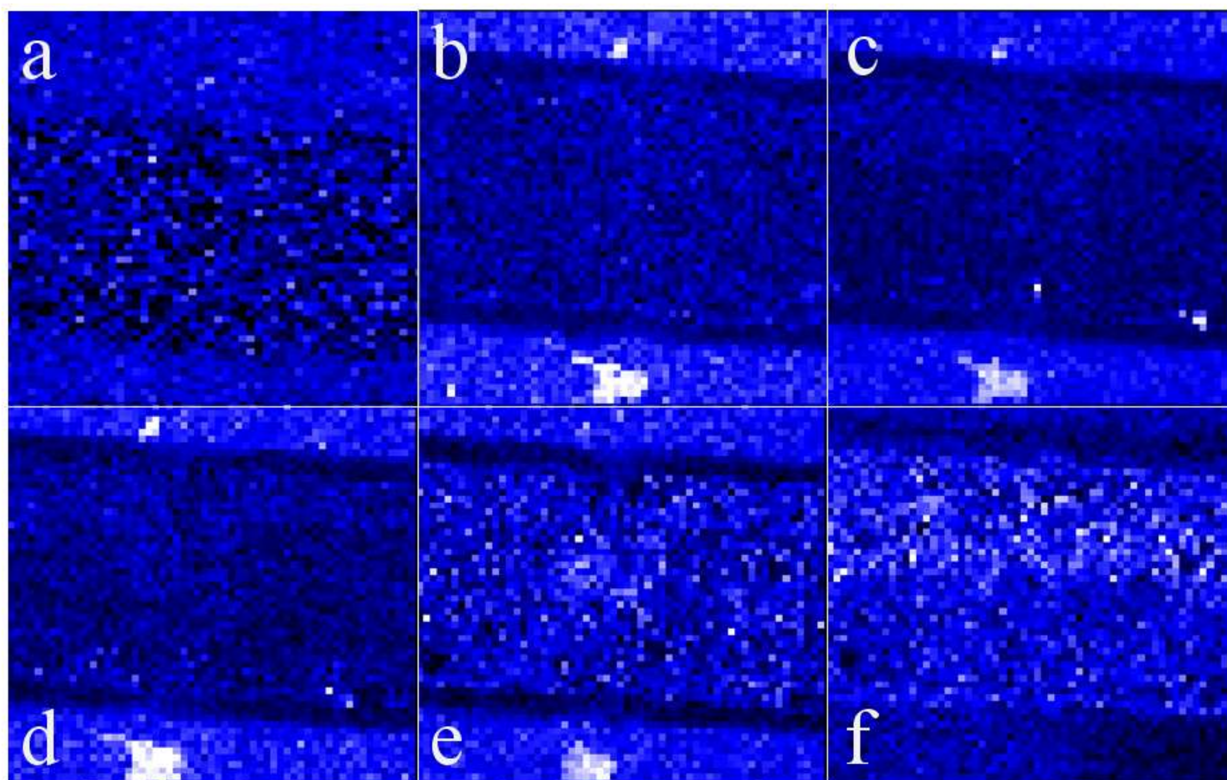

Figure S2. (a) SPEM image (600 × 600 μm^2), contrasted by Si 2*p* peak intensities, of the sample before annealing. Annealing time dependences of SPEM images (600 × 600 μm^2), contrasted by Si 2*p* peaks, at 400 °C: (b) 15 min, (c) 1 hr, (d) 2 hrs, (e) 3 hrs, and (f) 5 hrs.

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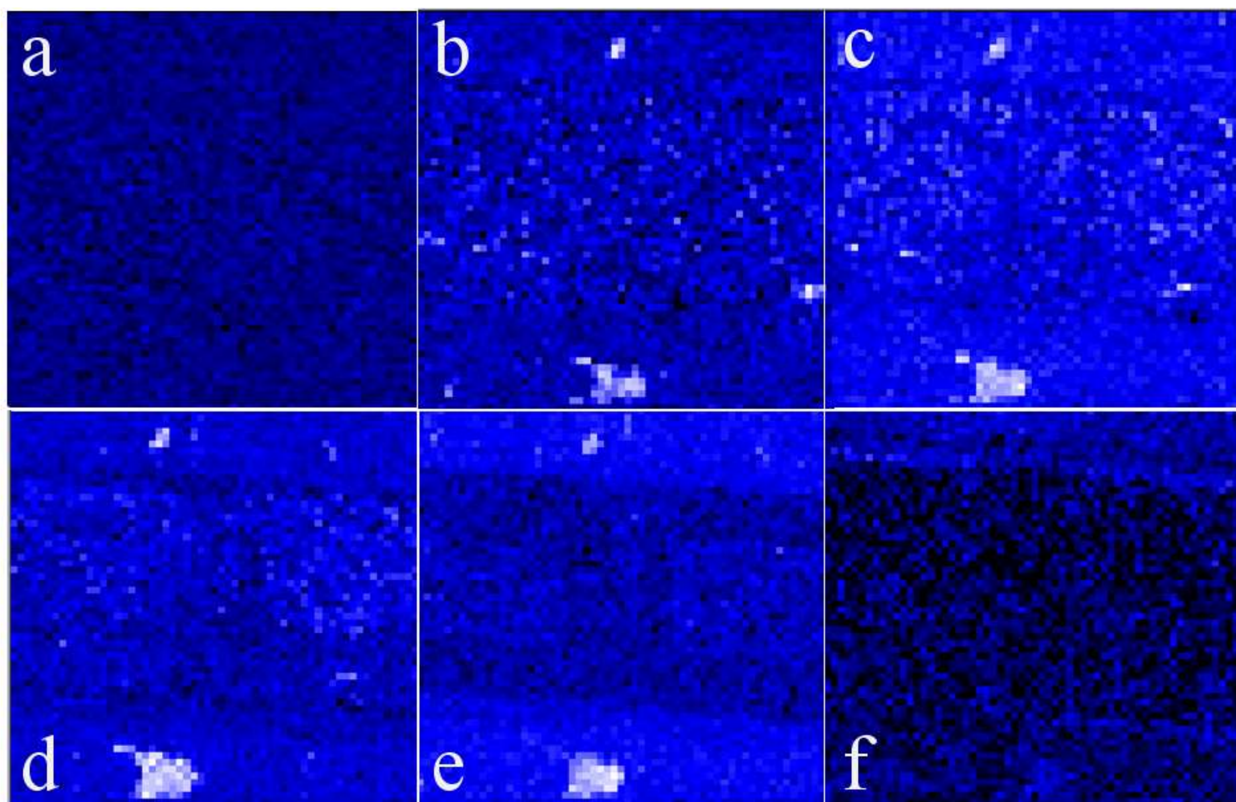

Figure S3. (a) SPEM image (600 × 600 μm^2), contrasted by O 1*s* peak intensities, of the sample before annealing. Annealing time dependences of SPEM images (600 × 600 μm^2), contrasted by O 1*s* peaks, at 400 °C: (b) 15 min, (c) 1 hr, (d) 2 hrs, (e) 3 hrs, and (f) 5 hrs.

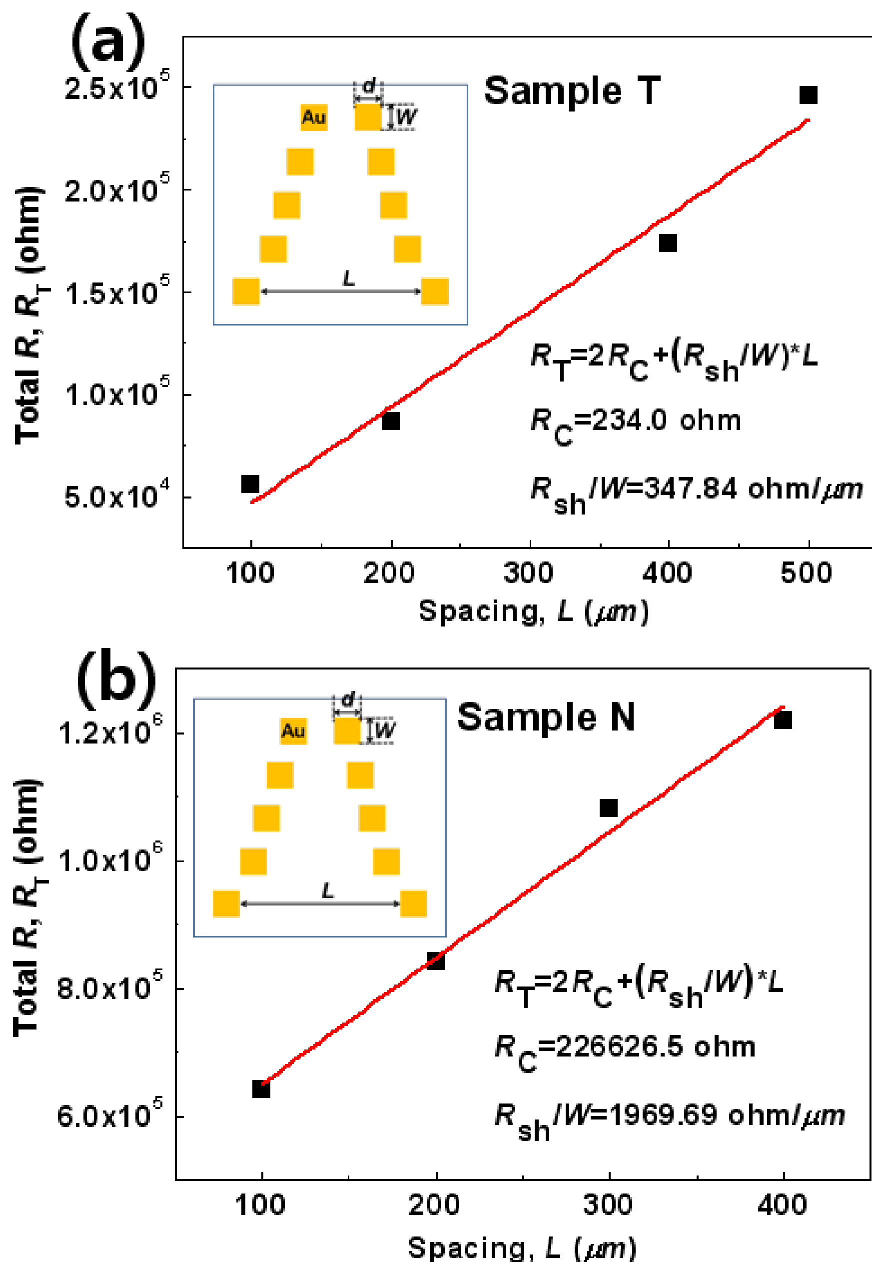

Figure S4. Plots of the total resistances versus spacing between two Au electrodes, (a) Au-Si contact after removing the SiO_x layer by catalytic oxidation (named T). Before annealing the Graphene/Au layer on the SiO_x/Si surface was patterned by ion sputtering method. (b) Au on the SiO_x/Si surface without treatment (named N). Insets in (a) and (b) show the Au pattern (width (W) × length (d):100×100 μm^2, spacing (L): 100, 200, 300, 400, and 500 μm).