Supplementary Information

Graphene-enabled block copolymer lithography transfer to arbitrary substrates

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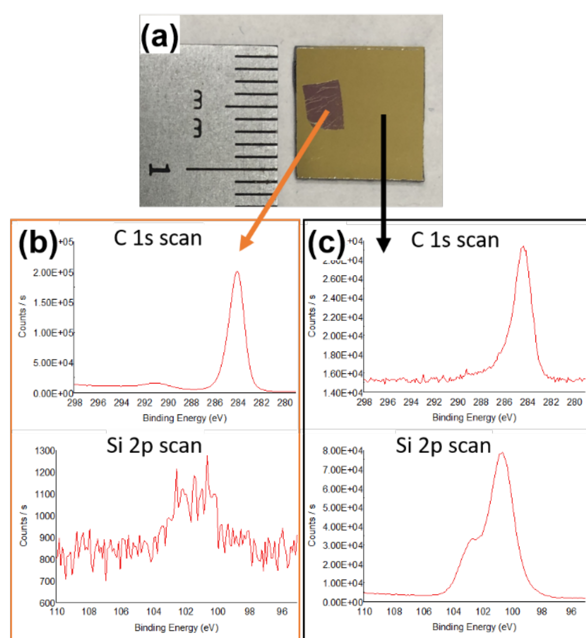
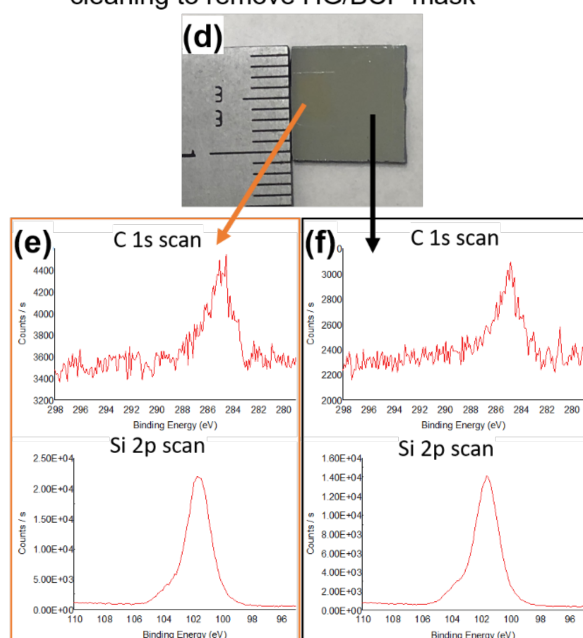
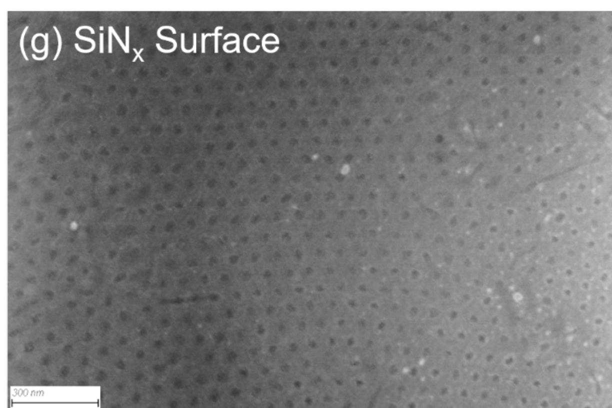
After relamination onto SiNx substrate

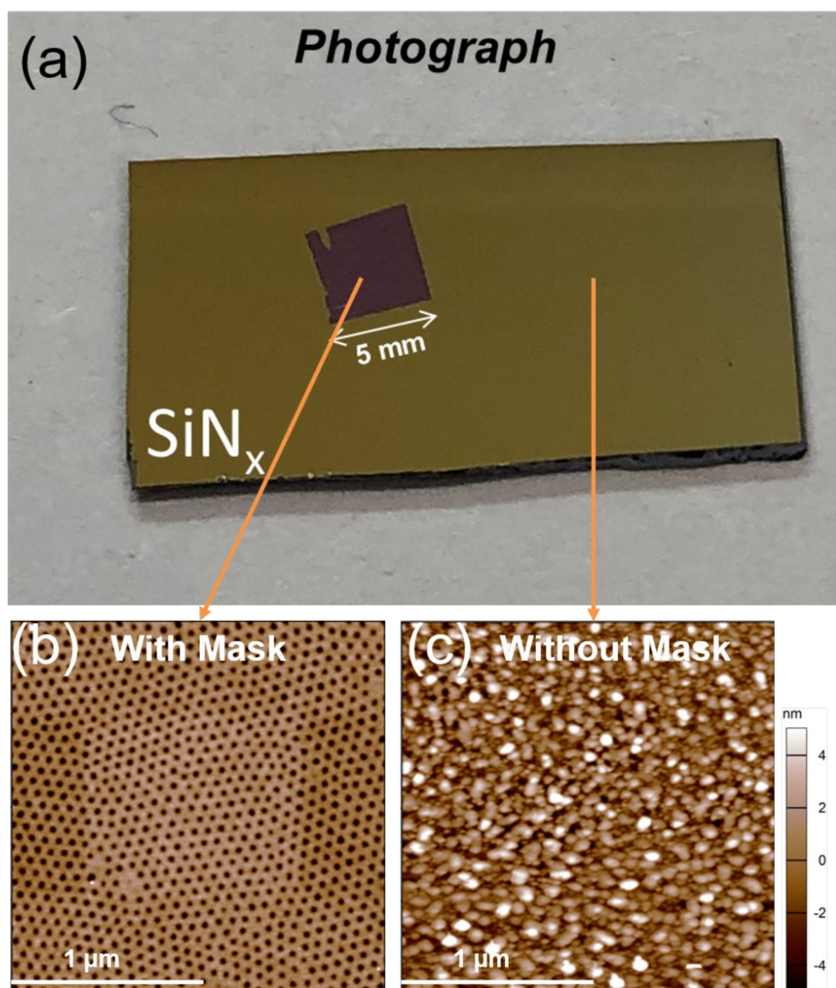


After CF4 RIE and subsequent O_2 plasma cleaning to remove HG/BCP mask





SI Figure S1. XPS analysis of HG/BCP mask and subsequent plasma removal on SiN_x substrate. (a) Photograph of SiN_x substrate after relamination of HG/BCP mask. (b) XPS analysis of C 1s and Si 2p peaks of the region with the mask before RIE and O_2 plasma cleaning. The strong C 1s peak and negligible Si 2p peak indicate a mask-covered SiN_x surface. (c) XPS analysis of the region without the mask before RIE and O_2 plasma cleaning. The spectra show a strong Si 2p peak from SiN_x. (d) Photograph of SiN_x substrate after CF_4 RIE for 30 sec and subsequent O_2 plasma cleaning for 1 min. The area was marked with a razor blade before RIE. (e) XPS analysis of the masked region after RIE and O_2 plasma cleaning. The extremely weak C 1s peak and strong Si 2p peak in the masked region show that the mask was removed by the RIE and O_2 plasma cleaning. (f) XPS analysis of the region without the mask after RIE and O_2 analysis shows weak C 1s and strong Si 2p peaks, similar to the masked region. (g) SEM image of the region with HG/BCP mask clearly showed porous SiN_x surface.



SI Figure S2. Transfer and BCP lithography on SiN_x substrate. (a) SiN_x with transferred BCP/SLHG shown as a 5 mm block. AFM height images of: (b) the area under the BCP mask after lithography, and (c) the unmasked area after lithography.