Figure S1 O K-edge XANES spectra of ReRAM in region E (a) and region F (b).
Figure S2  STXM images of GO-ReRAM, before (a) and after applying bias (b). Junction of electrodes, TE, BE, and GO without electrodes are denoted as A, B, C, and D respectively. TE and GO in region A were damaged by Joule heating originated from fast voltage sweep (from 0 to -3 V), and unstable electrical ground.
Figure S3  X-ray transmission image (45 μm × 45 μm) after stack measurements (30 μm × 30 μm, red dash line). There was no carbon deposition and change of contrast at region measured by stack.