Supplementary Materials

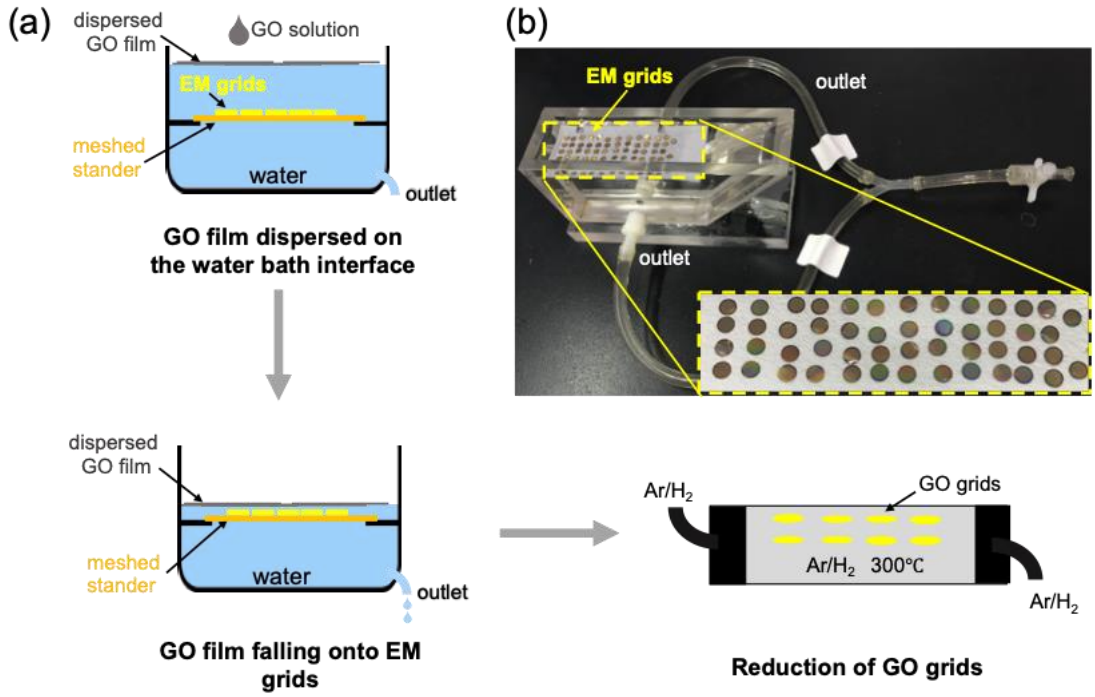


Fig. S1 Flow diagram of RGO grids fabrication. (a) GO solution was gently pipetted onto the water bath surface, and dispersed to form GO film at the air-water interface. The EM grids had been placed on the meshed steel stander which was immersed into the water bath in advance. With water slowly drained, the GO film would be coated onto EM grids and then air-dried. The GO grids were finally baked in an atmosphere of H_2/Ar at 300 ºC for 1 h to produce reduced graphene oxide (RGO) grids. (b) The device used for coating GO film onto EM grids on a large scale

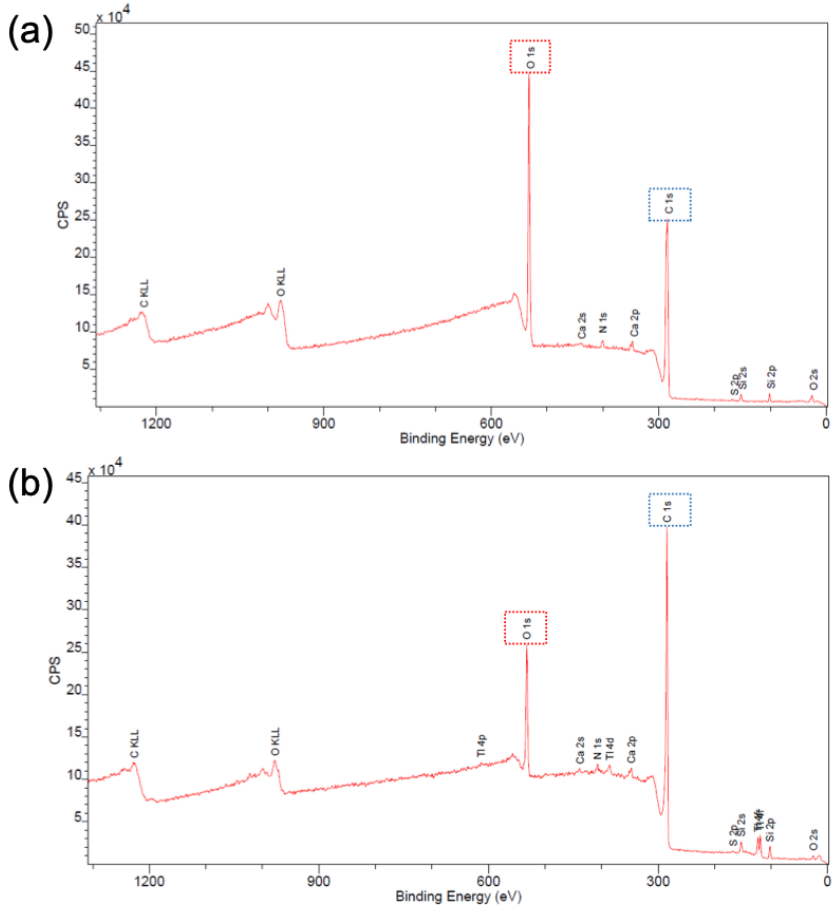


Fig. S2 XPS survey spectra of GO (a) and RGO (b) grids

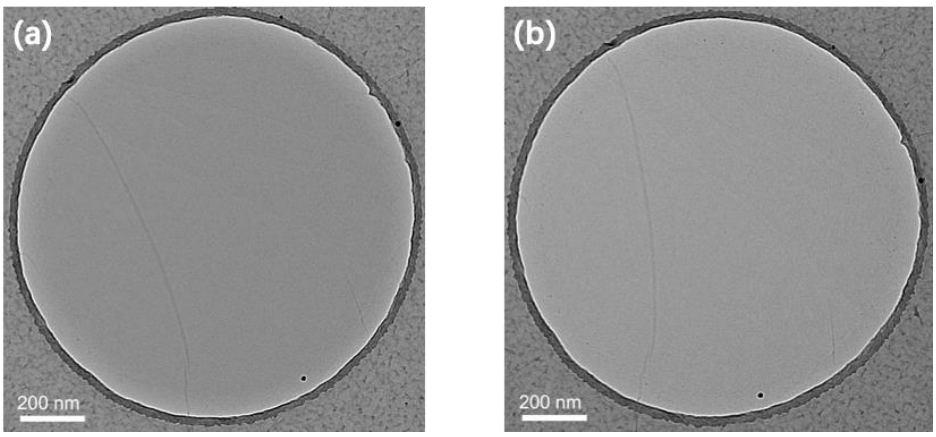


Fig. S3 TEM micrographs of a GO film coated hole (a) and the same hole after reduction treatment (b)

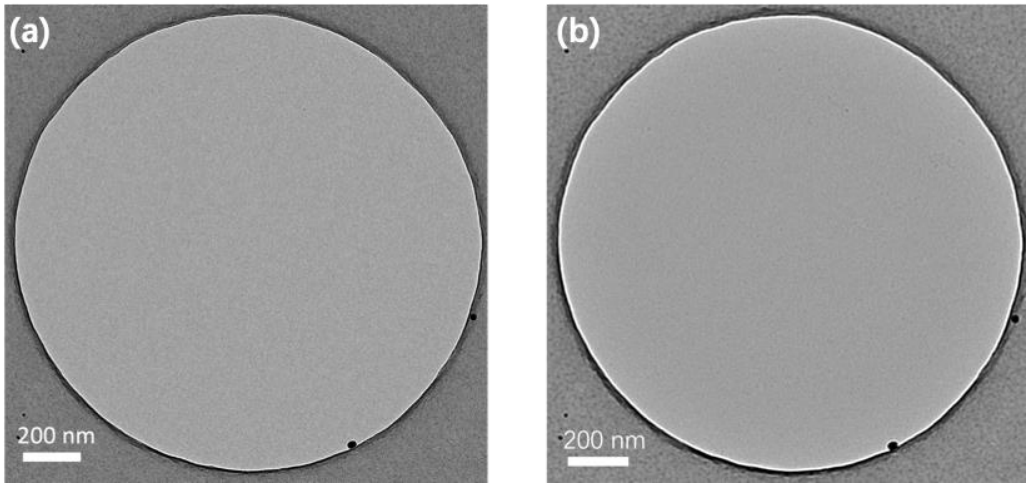


Fig. S4 TEM micrographs of a RGO film coated hole at a defocus of 3μm (a) and 15μm (b). The RGO film was almost free of contaminations

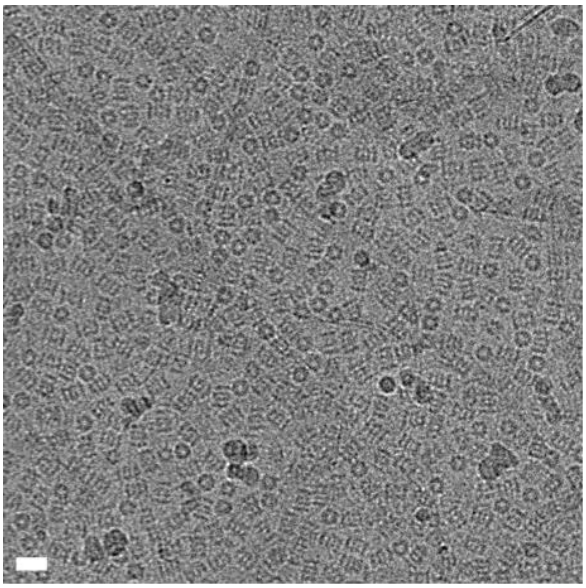


Fig. S5 A representative cryo-EM micrograph of 20S proteasome on the GO grid. The scale bar represented 20 nm. There were certain portion of 20S proteasome particles with top view (circle shape), which was totally absent in the RGO grid

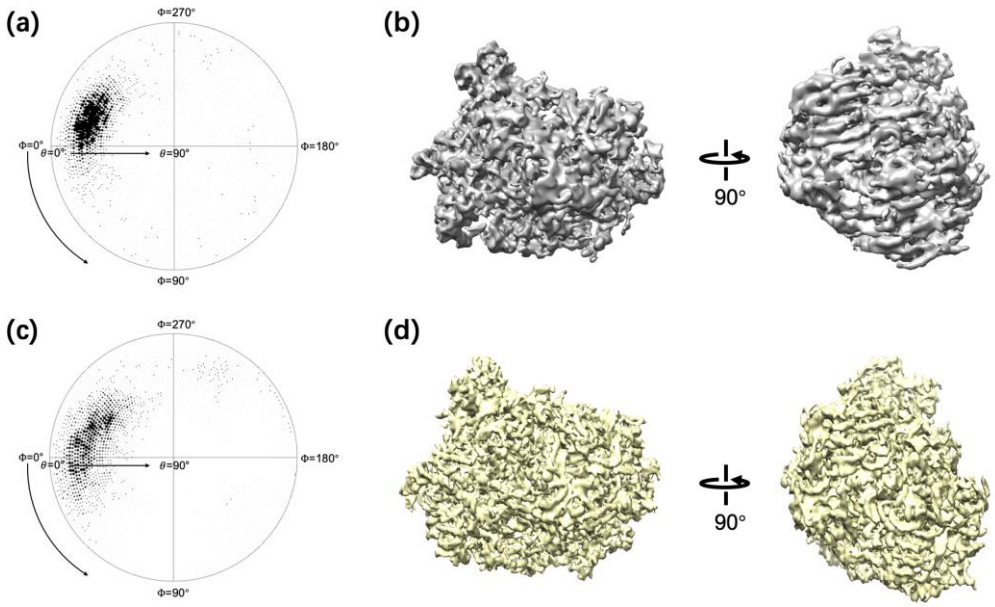


Fig. S6 (a) The Euler angle distribution of ribosome particles on GO grids. (b) The cryo-EM density of ribosome reconstructed by using particles on GO grids. (c) the Euler angle distribution of ribosome particles on RGO grids. (d) The cryo-EM density of ribosome reconstructed by using particles on RGO grids

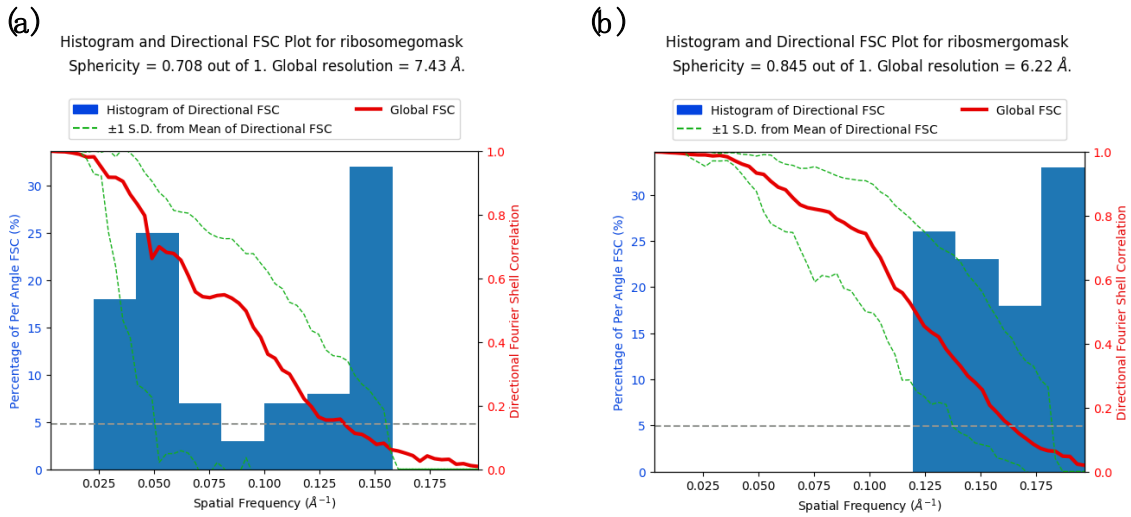


Fig. S7 The directional FSC curves of the reconstructions of ribosome supported by the GO (a) and RGO (b) grids. The histogram of directional FSC in (a) was more non-uniform than that in (b), indicative of stronger preferred orientation of ribosome particles on the GO grids

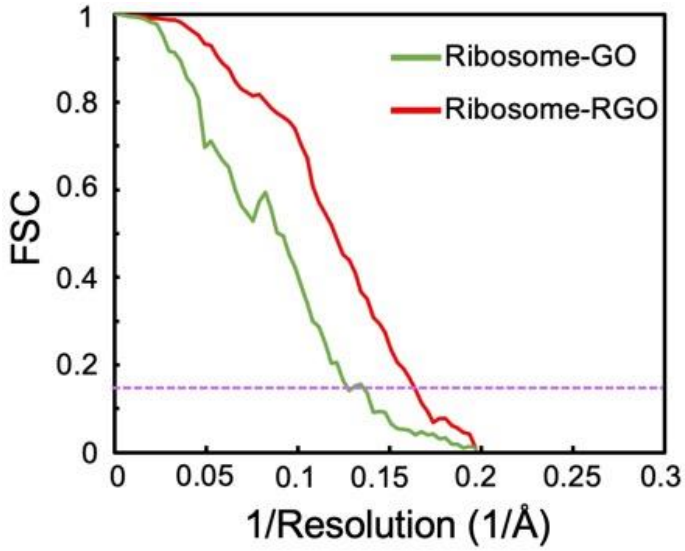
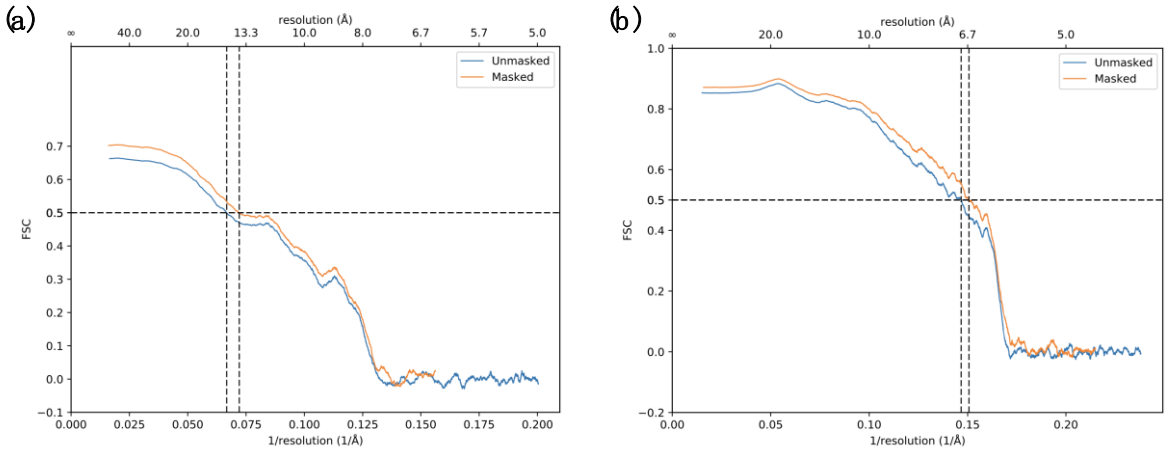


Fig. S8 FSC curves of ribosome reconstructions on GO and RGO grids. The dotted purple line indicated FSC = 0.143



Ribosome GO Ribosome RGO

Fig. S9 The model-to-map FSC curves of ribosome reconstructions on GO (a) and RGO (b)

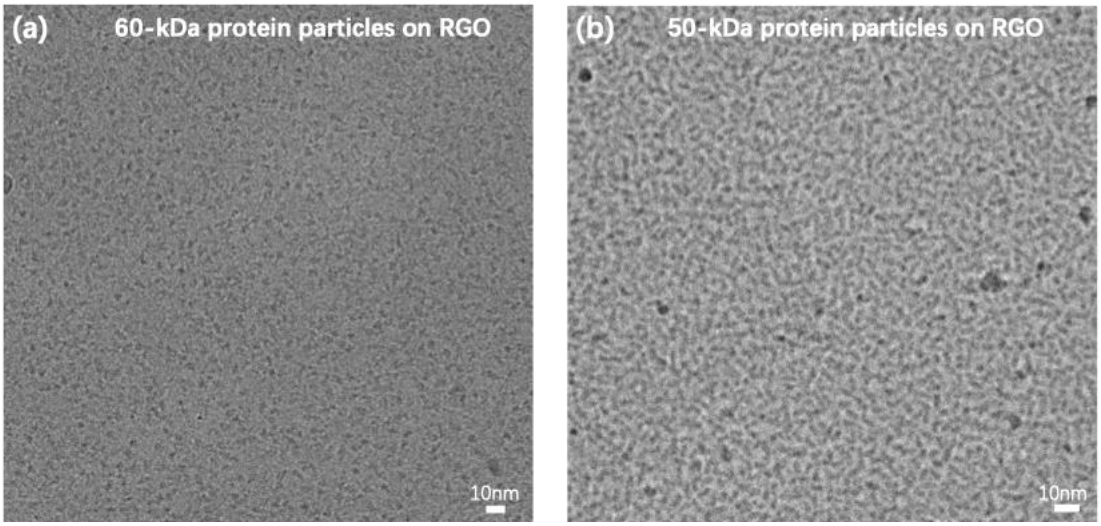


Fig. S10 Representative cryo-EM micrographs of a 60-kDa protein glycosyltransferase (a) and a 50-kDa protein Rv2466c (b) supported by RGO grids, both exhibiting nice contrast

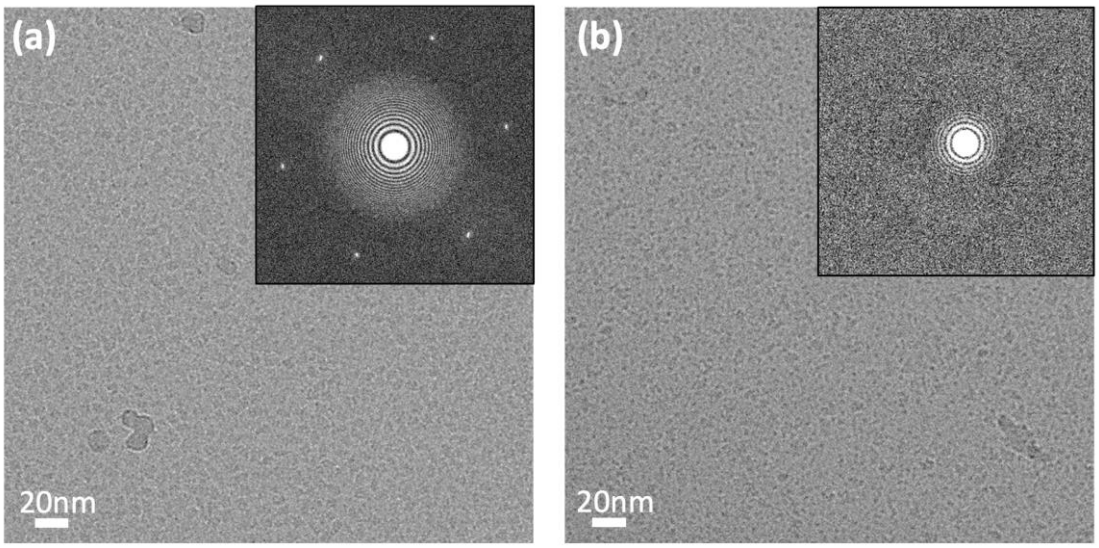


Fig. S11 Cryo-EM micrographs of RBD-ACE2 complex on RGO-supported region (a) and RGO-broken region (b). These two micrographs were taken from different regions of the same EM grid