

Novelty and Impact Statement

We describe and analyze two very simple ways of making clean nitrogen doped graphene. The first one (radio frequency plasma) was previously only described with very different parameter sets that presumably leads to highly disordered structures, and no atomic resolution analysis was shown. The second one (direct current glow discharge) is completely new. Both methods can be applied to free-standing monolayer graphene. These structures are of interest for low-voltage TEM studies, in particular as a support substrate, and also as a test structure for microscopic method development. Our work makes such structures easily accessible in every TEM lab, since they can be made with equipment that is usually there already, without the need for dedicated ion acceleration facilities.