Supporting Information for

Exploring the working mechanism of graphene patterning by

magnetic-assisted UV ozonation

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Figure S1: Influence of an external vertical field (${}^{B_Z} = 0.31 T$, $\nabla B_Z = 90 T/m$) on

graphene patterning (10×3 min) by UV ozonation with an initial oxygen content of 2 kPa. High-resolution SEM images of the graphene microstructure patterned (a) without and (b) with assistance of the magnetic field. As indicated, the quality of graphene patterning is improved when the magnetic field is applied.



Figure S2: Influence of an external vertical field (${}^{B_Z} = 0.31 T$, $\nabla B_Z = 90 T/m$) on graphene patterning (10×2 min) by UV ozonation with an oxygen-ozone mixture (0.5 kPa, 8% O₃ by volume). High-resolution SEM images of the graphene microstructure patterned (a) without and (b) with assistance of the magnetic field. As indicated, the etching intensity of graphene in an oxygen-ozone mixture is enhanced by the magnetic field.



Figure S3: Influence of an external vertical field (${}^{B_Z} = 0.31 T$, $\nabla B_Z = 90 T/m$) on graphene patterning (10×3 min) by UV ozonation with a mixture of oxygen and nitrogen molecules (2 kPa O₂+20 kPa N₂). High-resolution SEM images of the graphene microstructure patterned (a) without and (b) with assistance of the magnetic field. As indicated, the etching intensity of graphene is enhanced by the magnetic field.