

Electronic Supplementary Information

Guidelines for Tailored Chemical Functionalization of Graphene

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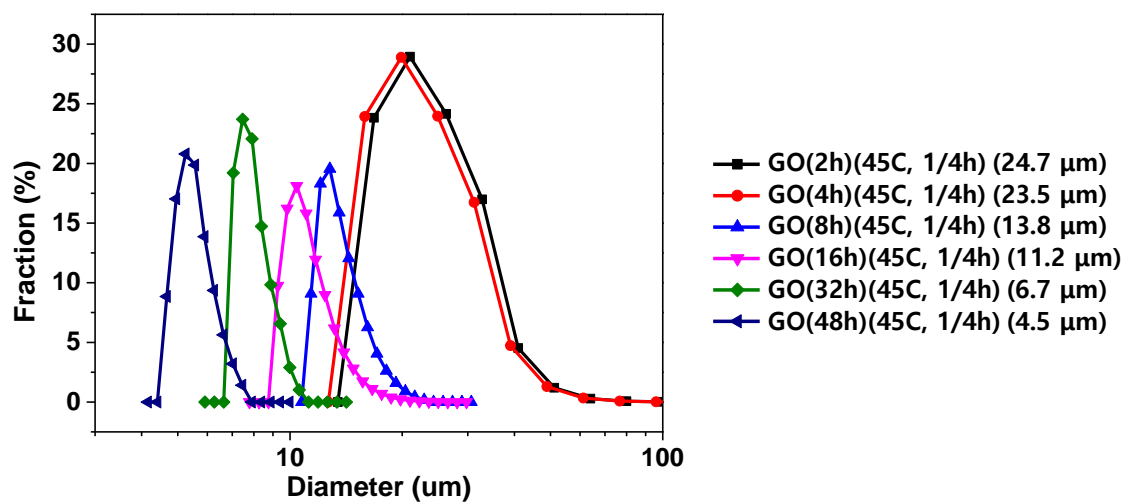


Figure S1. Average particle size data obtained from DLS analysis of GO samples treated at various oxidation times of step I.

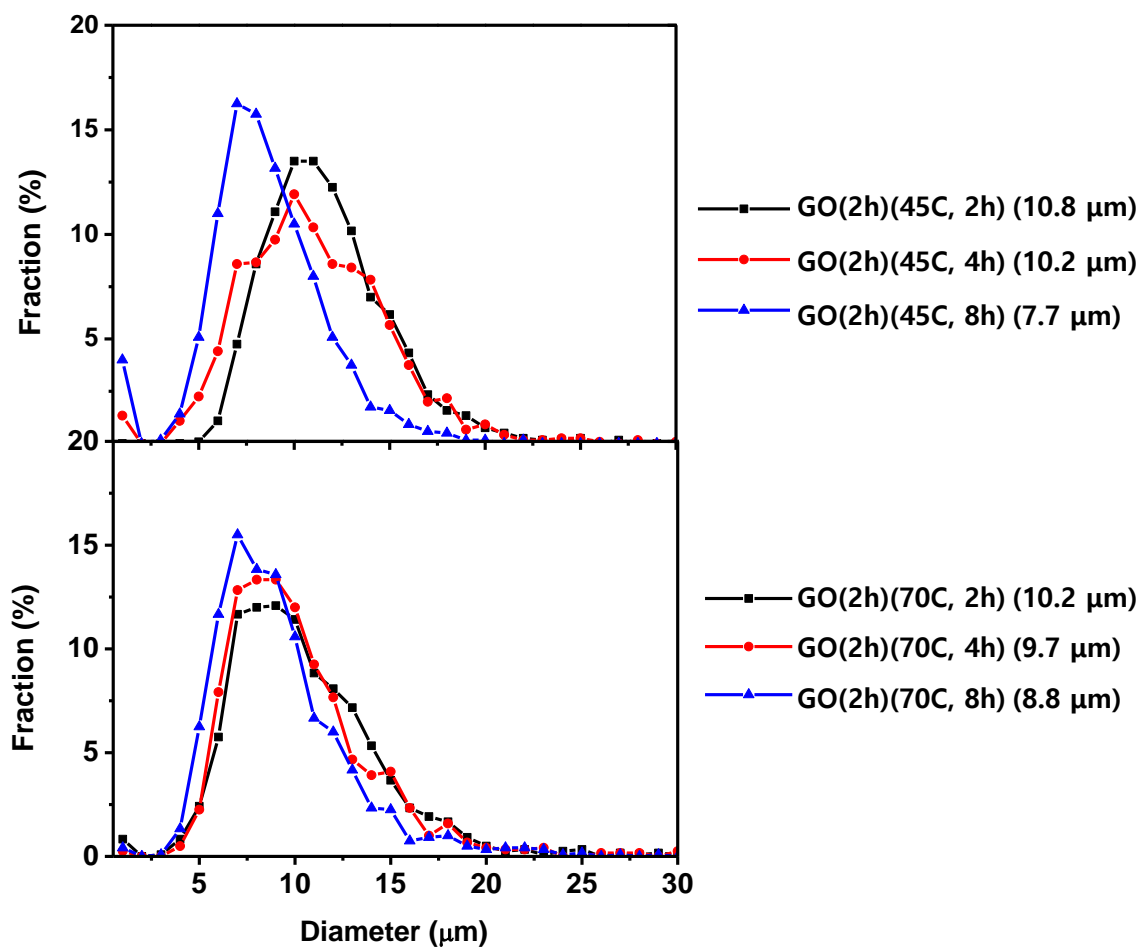


Figure S2. Average particle size data obtained from DLS analysis of GO samples treated at various oxidation times of step II. (Reconstructed from Ref. S1)

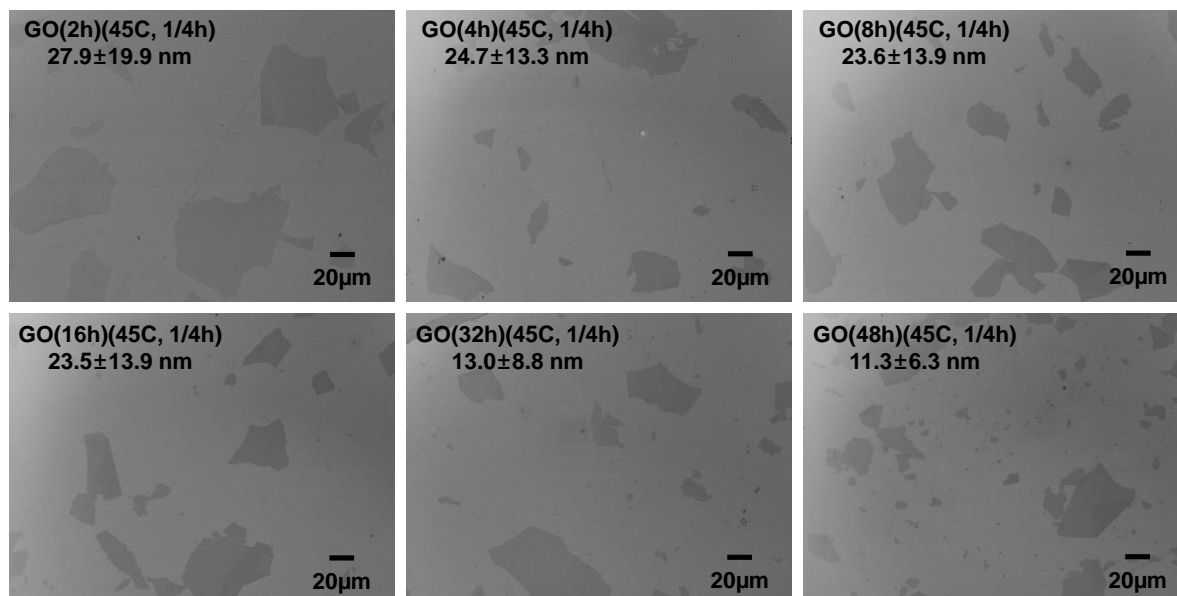


Figure S3. SEM images of GO treated at various degree of step I oxidation and their average lateral size.

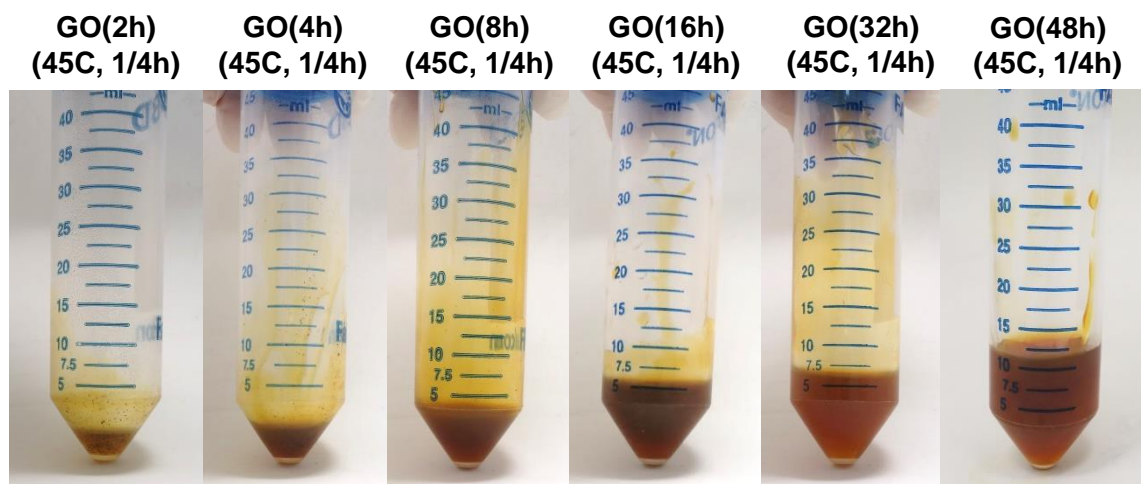


Figure S4. Images of resultant GO samples treated at various step I oxidation times.

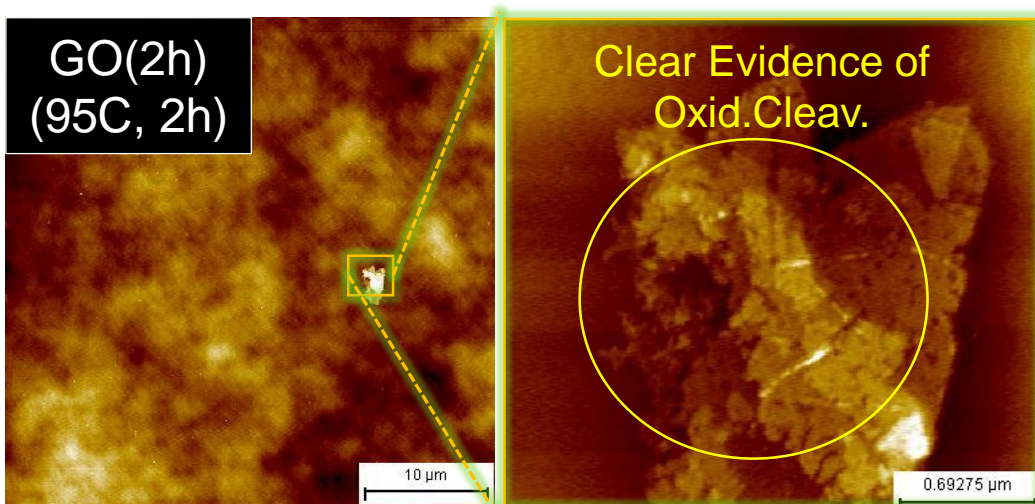


Figure S5. AFM images of GO(2h)(95C, 2h).

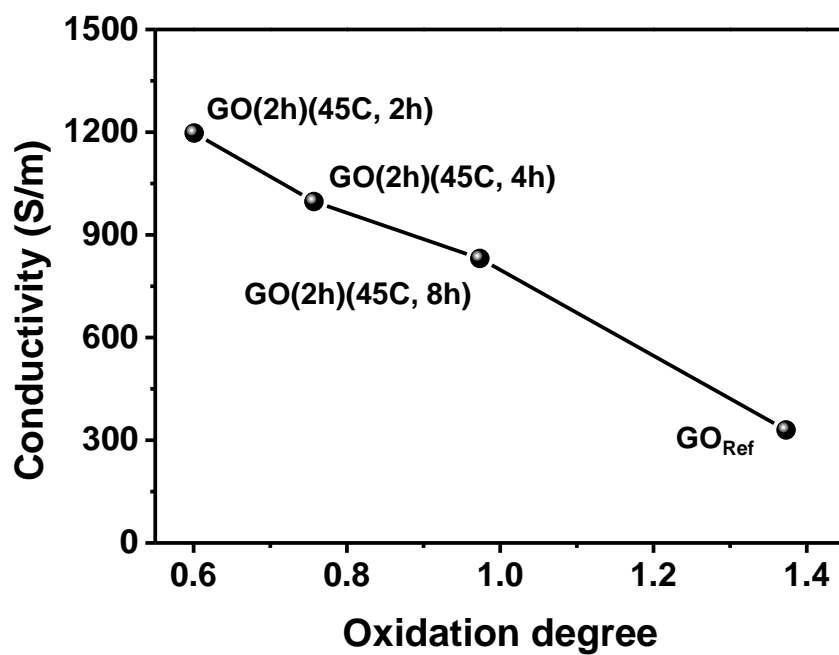


Figure S6. Conductivity of rGO films with a different degree of step II oxidation. The oxidation degree in this figure is the ratio of functionalized carbon to unfunctionalized carbon.

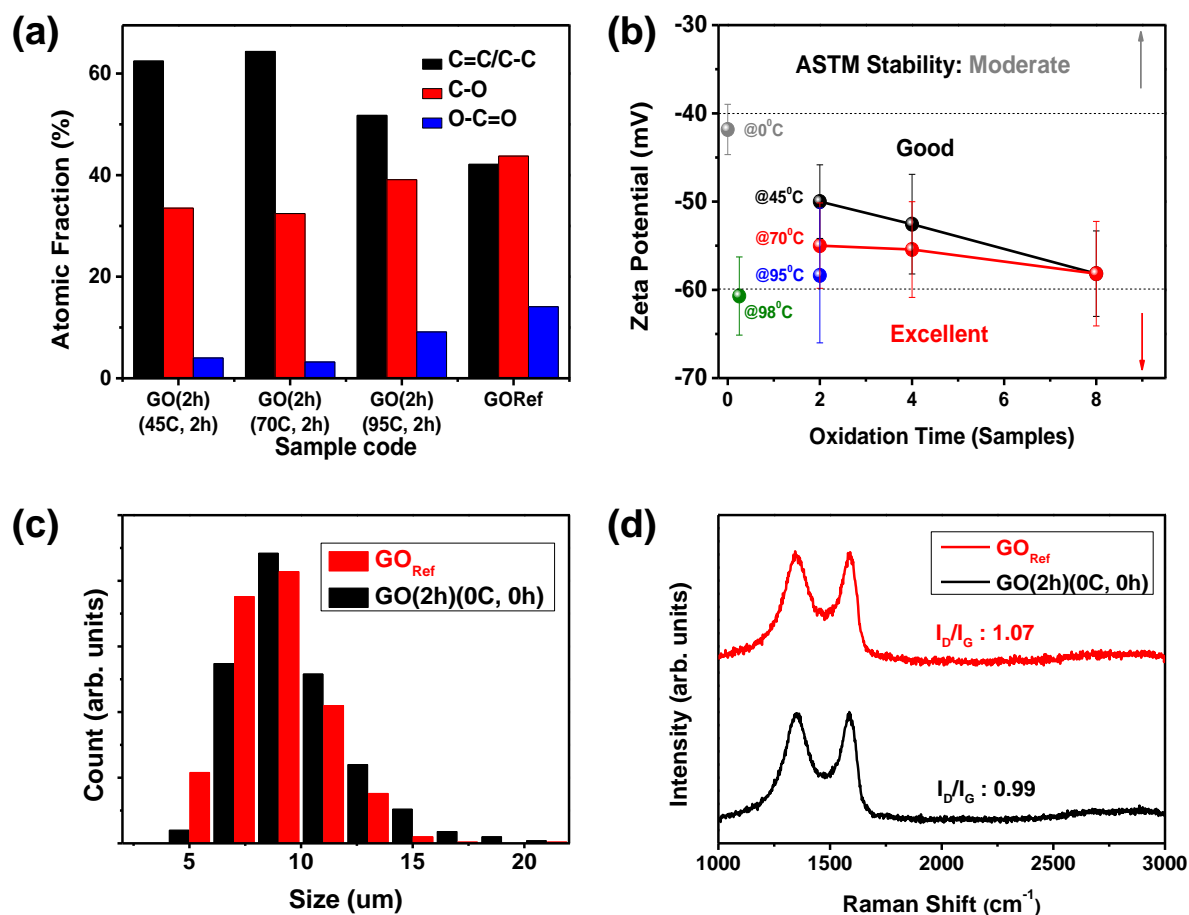


Figure S7. (a) Quantitative analysis of various forms of C calculated from deconvoluted C1s XPS data and (b) zeta-potentials of GO with various degree of oxidation and GO_{Ref}. (c) Size distribution examined by DLS and (d) Raman spectra of GO_{Ref} and GO(2h)(0C, 0h). GO_{Ref} has a very highly oxidized state compared to other samples.

References

(S1) Kang, J. H.; Kim, T.; Choi, J.; Park, J.; Kim, Y. S.; Chang, M. S.; Jung, H.; Park, K. T.; Yang, S. J.; Park, C. R. Hidden Second Oxidation Step of Hummers Method. *Chem. Mater.* **2016**, *28*, 756-764.