

Graphene & Graphene Oxide

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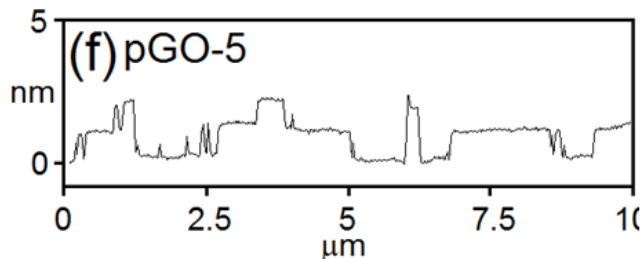
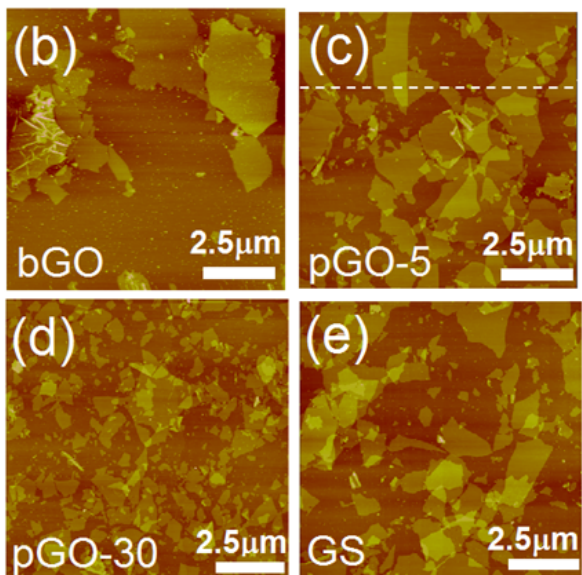
NNIN Facility utilized: CharFac

DESCRIPTION OF WORK

- ◆ Aqueous route to synthesize graphene from graphene oxide.
- ◆ Graphene oxide particle size control.

MAJOR OBSERVATIONS

- ◆ A longer sonication time in water will lead to a smaller particle size of GO. (compare c. and d.) [1]
- ◆ A more powerful sonication in water will lead to a similar particle size even with much shorter sonication time. (compare b. and c.) [1]
- ◆ Dehydration reaction will not change the particle size of GO and GS. (compare c. and e.) [1,2]
- ◆ Thickness of particles is approximately 1 nm, which indicates single-atomic-layer. (see f.) [1,2]



Publications

1. Liao, K.H.; Lin, Y.S.; Macosko, C.; Haynes, C., "Toxicity of Graphene Oxide and Graphene in Human Erythrocytes and Skin Fibroblasts", *ACS Nano*, 2011, *Submitted*
2. Liao, K.H.; Mittal, A.; Bose, S.; Leighton, C.; Mkhoyan, K.A.; Macosko, C., "Aqueous Only Route toward Graphene from Graphite Oxide", *ACS Nano*, 2011, *In Press (available online)*