Repeatable and non-destructive transfer of large-area graphene onto arbitrary substrates

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Synthesis of graphene by chemical vapour deposition (CVD) on commercially-available copper foils [1] is a promising and economical route towards producing high quality, continuous sheets of graphene, and is being rapidly scaled to industrial volumes of production [2]. However, transferring such large quantities of graphene onto target substrates in a reproducible manner accounts for a significant portion of the production costs [3]. Here, we demonstrate a simple method for transferring large areas of graphene onto arbitrary surfaces using a commercially available polymer foil as a carrier substrate. The method provides a non-destructive technique to transfer graphene that is also economical, reproducible, and scalable – we have demonstrated graphene transfers at scales of up to A4 sheets of paper – and can also be used to transfer hexagonal boron nitride from various catalyst substrates.

Figures

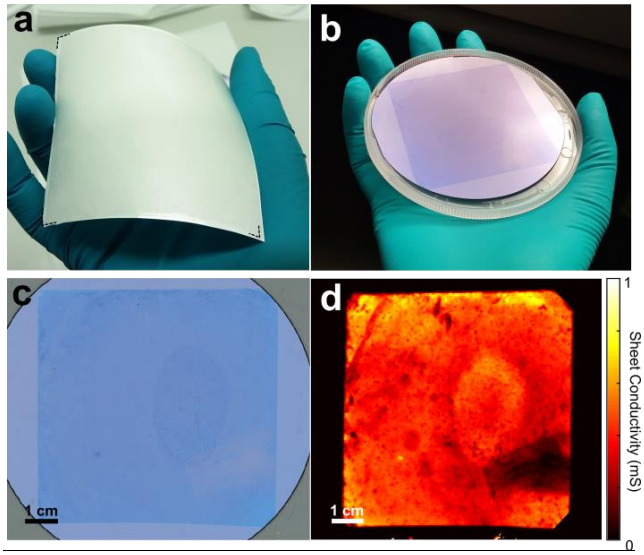

Figure 1: (a) Photograph of 10 cm x 10 cm polymer carrier foil with graphene transferred on top, (b) photograph of graphene in (a) transferred onto a 4'' 90 nm SiO_2/Si wafer, (c) optical micrograph and (d) terahertz time-domain spectroscopy map of sheet conductance of transferred film in (b).

References

[1] X. Li, et al., Science, **324** (2009),pp. 1312-1314.
[2] X. Xiao, Y. Li, and Z.Liu, Nature Materials, **15** (2016), pp. 697-698.
[3] Y. Zhu, et al., National Science Review, **0** (2017), pp. 1-12.