

# CVD Graphene: Growth Frontiers & Mass Production

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With 18 years history of graphene materials, there still exist lots of technical challenges towards graphene industry, including: 1) Low-cost mass production technology; 2) Batch peeling-transfer technology; 3) Transition from single-layer graphene component to macroscopic materials with retained intrinsic performances; 4) Dispersing technology into matrix materials; 5) Irreplaceable killer applications. Beijing Graphene Institute (BGI), established in 2018 and currently having nearly 300 employees, aims to solve these challenging issues by paying particular emphasis to mass production of high-quality CVD graphene materials and manufacturing equipments. BGI is devoted to providing the best graphene materials and related equipments to the market as well as the graphene-related R&D services to enterprises.

The current R&D emphasis on CVD graphene materials at BGI is laid on three different directions: 1) high-quality graphene films and wafers for general purpose; 2) graphene-skinned materials (GSM); 3) purpose-oriented graphene materials focusing on thermal managements, optical communications and medical applications. The star products into market are A3-size graphene films with mm grain boundaries, 4- and 6- inch single crystal graphene wafers, superclean graphene films with best thermal and electrical performances, graphene-skinned glass & fibers, graphene-skinned aluminum oxide fibers and etc. The graphene-skinned glass fibers have been used for deicing applications with extremely high electrothermal conversion efficiency up to 94%. At BGI, we are also working for the customized graphene growth depending on the special needs and requests from customers. There is actually a great space in this area, which is particularly important before graphene films and wafers find their practical application market in next ten years.