

## Securing large flake graphite feedstock for mechanically exfoliated graphene

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To produce graphene on a commercial scale mechanical exfoliation is seen as the most promising production route by the mining and mineral processing industry. Secure supply of the main feedstock raw material – large flake, natural graphite – will be a decisive factor in graphene's success as it is the only available source and has no substitutes.

Today, the natural graphite industry is not structured to accommodate any significant increase in demand from new markets. Should the commercialization of mechanically exfoliated graphene occur at a faster pace than anticipated, the commercialization.

The natural graphite industry produced 1.019m. tonnes in 2012 but only 55% of this was flake graphite. Of the world's flake graphite mined under 20% is large flake (+80 mesh, >94% carbon) suitable to produce mechanically exfoliated graphene.

In theory the amount of graphite needed should be minimal owing to the stripping away of graphene layers from the flake of graphite – one flake should produce multiple layers of graphene. The problem graphene pioneers face, however, is one of yield – much similar to spherical graphite producers face today in their search for an optimum battery anode material. The wastage on such early production techniques will be significant.

The graphite industry will need to be informed on what raw material will be required, in what tonnages, and in what quality to be able to position their businesses to supply graphene manufacturers consistently.

The graphite mining and graphene research worlds are only now beginning to converge. Companies such as Grafoid Inc – a publically traded graphene development company – are working in conjunction with Focus Graphite, a Canadian graphite exploration company. The relationships between industry and academia will be the critical factor in successful commercializing graphene on a global scale.

### References

[1] Moores, Simon; The Natural Graphite Report 2012: Data Analysis and Forecasts for the next five; *Industrial Minerals Research*; September 2012

[2] Chiu, Dr Gordon; Commercialising Graphene; Critical Materials for Green Energy; *Industrial Minerals*; May 2012