Large-scale production of 2D crystals for energy applications

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Abstract

The development of industrial-scale, reliable, inexpensive production processes of graphene and related two-dimensional materials (GRMs)[1,2] is a key requirement for their widespread use in several application areas,[1-6] providing a balance between ease of fabrication and final product quality.

In particular, in the energy sector, the production of GRMs in liquid phase [2,6] represents a simple and cost-effective pathway towards the development of GRMs-based energy devices, presenting huge integration flexibility compared to other production methods. Here, I will first present our strategy to produce GRMs on large scale by wet-jet milling [7] of their bulk counterpart and then an overview of their applications for energy conversion and storage devices. [3,8-10]

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