Substrate-Free Gas-Phase Synthesis of High-Quality Graphene Powder

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Abstract
Synthesis determines the future. A simple and industrial scalable method for growing high-quality graphene powder is critical for its high-end applications. Herein, we have developed a simple plasma discharge process for continuing synthesis of high quality graphene at low-cost in the gas phase, similar to "snowing," which is catalyst-free and substrate-free.[1] Similar to this method, we also developed a high-temperature method which can identically produce high-quality graphene in the gas-phase by fast pyrolysis of carbon source at around 1600 °C. It is demonstrated that these two processes produce foam-like, fluffy, 3D macroscopic architectures, which can be further used in strain sensors.

References

[1] J. Zhang et al., Adv. Mater., 30, 1803189 (2018).