

Largely Exfoliated Graphite into Pristine Graphene Using Supercritical CO₂ Technique and Its Application

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Abstract

Graphene has attracted more and more attention over the world because it has superior properties including electrical conductivity, thermal conductivity and mechanics, which has found wide applications. Though the preparation of graphene has been made with great process, largely production of graphene with high quality has been a challenge issue yet. We presented a simple, green and scalable supercritical CO₂-based technique to produce pristine graphene from graphite in this paper. SEM, TEM, AFM, Raman spectra were applied to characterize the produced sample. More than 90% graphene sheets were less than three layers, which were defect-free. The produced graphene had high electrical conductivity of 10⁵-10⁶. The simulation of the process was made, and a pilot of producing 1kg/day pristine graphene was developed. The applications of the produced graphene in the composite, transparent electrical film, printing electrode, catalyst et al. were presented too.

References

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Figures

