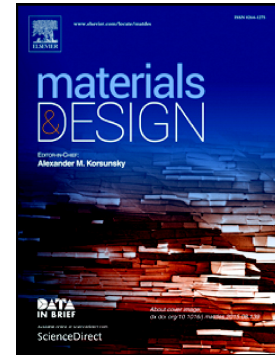


## Accepted Manuscript

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PII: S0264-1275(17)30163-6  
DOI: doi: [10.1016/j.matdes.2017.02.035](https://doi.org/10.1016/j.matdes.2017.02.035)  
Reference: JMADE 2775

To appear in: *Materials & Design*

Received date: 16 November 2016  
Revised date: 13 February 2017  
Accepted date: 13 February 2017

Please cite this article as: Bo Zhong, Xiaodong Zhang, Long Xia, Yuanlie Yu, Guangwu Wen , Large-scale fabrication and utilization of novel hexagonal/turbostratic composite boron nitride nanosheets. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Jmade(2017), doi: [10.1016/j.matdes.2017.02.035](https://doi.org/10.1016/j.matdes.2017.02.035)

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# Large-scale fabrication and utilization of novel hexagonal/turbostratic composite boron nitride nanosheets

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## ABSTRACT

In this report, we have developed a scalable approach to massive synthesis of hexagonal/turbostratic composite boron nitride nanosheets (*h/t*-BNNSs). The strikingly effective, reliable, and high-throughput (grams) synthesis is performed *via* a facile chemical foaming process at 1400°C utilizing ammonia borane (AB) as precursor. The characterization results demonstrate that high quality of *h/t*-BNNSs with lateral size of tens of micrometers and thickness of tens of nanometers are obtained. The growth mechanism of *h/t*-BNNSs is also discussed based on the thermogravimetric analysis of AB which clearly shows two step weight loss. The *h/t*-BNNSs are further used for making thermoconductive *h/t*-BNNSs/epoxy resin composites. The thermal conductivity of the composites is obviously improved due to the introduction of *h/t*-BNNSs. Consideration of the unique properties of boron nitride, these novel *h/t*-BNNSs are envisaged to be very valuable for future high performance polymer based material fabrication.

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