

Abstract Submitted
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Synthesis of highly crystalline boron nitride nanotubes using plasma jet¹ MINSEOK KIM, JEONG-HWAN OH, SEUNG-HYUN HONG, YONG HEE LEE, TAE-HEE KIM, SOOSEOK CHOI, Jeju National University — Boron Nitride Nanotubes (BNNT) have triggered considerable attention from industrial fields due to their tantalizing characteristics such as mechanical, electron field emission, piezoelectric, thermal, optical, and biocompatible properties since it synthesized in 1995. In spite of this considerable attention, the low production rate is a conclusive obstacle to apply them in the various industrial fields. Therefore, it requires to improve the BNNT synthesis system to a broad possibility of them into industrial applications such as optoelectronic device and reinforcements for structural composites. In this work, we suggest that it is suitable to introduce triple direct current (DC) thermal plasma jet system with hydrogen injection for a scalable synthesis of BNNT since it has more advantages to produce small-diameter BNNT due to higher quenching rate of DC thermal plasma jet than induction thermal plasma jet in general. Additionally, the effect of hydrogen in the BNNT synthesis system is chemically discussed with Gibbs free energy for chemical reactions using HSC Chemistry.

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