Abstract Submitted
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The mechanism for low temperature growth of vertically aligned boron nitride nanotubes[1] JIESHENG WANG, Michigan Tech University, MING XIE, Michigan Tech University, YOKE KHIN YAP, Michigan Tech University — Boron nitride nanotubes (BNNTs) are well recognized as the candidate that will complement the uses of carbon nanotubes (CNTs) in nanotechnology. However, high growth temperatures (>1100 ^{o}C), low production yield, and impurities have prevented effective synthesis and applications of boron nitride nanotubes (BNNTs) in the past ten years. For the first time, we have succeeded on the growth of pure BNNTs on substrates [1, 2]. This has been realized based on our experiences of growing CNTs and boron nitride (BN) phases (cubic phase BN, hexagonal phase BN). According to our hypothetical model, energetic growth species play an important role on controlling the phases of BN solids. We have experimentally verified that BNNTs can be grown by energetic growth species by a plasma-enhanced pulsed laser deposition (PEPLD) technique. These BNNTs can be grown vertically aligned into arrays of regular patterns at 600 ^{o}C, and can be used for applications without purification. The growth mechanism of thee BNNTs will be discussed. [1]. Yap et al., Bull APS Vol 50, 1346-1347 (March 2005). [2]. Wang *et al., nano Letters* (2005) ASAP, DOI: 10.1021/nl051859n.

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