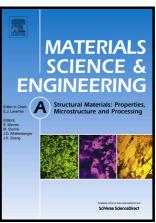
Author's Accepted Manuscript

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www.elsevier.com/locate/msea

PII: S0921-5093(17)31427-2

DOI: https://doi.org/10.1016/j.msea.2017.10.101

Reference: MSA35704

To appear in: Materials Science & Engineering A

Received date: 16 May 2017 Revised date: 27 October 2017 Accepted date: 28 October 2017

Cite this article as: Ankita Bisht, Vijayesh Kumar, Lu Hua Li, Ying Chen, Arvind Agarwal and Debrupa Lahiri, Effect of warm rolling and annealing on the mechanical properties of aluminum composite reinforced with boron nitride n a n o t u b e s , *Materials Science & Engineering A*, https://doi.org/10.1016/j.msea.2017.10.101

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Effect of warm rolling and annealing on the mechanical properties of

aluminum composite reinforced with boron nitride nanotubes

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ABSTRACT

The effect of rolling and annealing on boron nitride nanotube (BNNTs) reinforced aluminum-

composites is investigated in this study. Composites were fabricated via conventional sintering

method with 0, 2 & 5 wt% BNNT addition in aluminum matrix. Addition of 2 wt% BNNT

improved hardness and elastic modulus by 23% and 18%, respectively. Rolling the same

composite at 200°C with 60% reduction in single pass improved modulus and hardness of the

composite by 60% and 31%, respectively, over Al. Addition of 5 wt% BNNT led to reduced

properties due to agglomeration, which on rolling developed cracks. Annealing the rolled Al-

BNNT composite further led to an improvement in strength and ductility. Annealed Al-2BNNT

showed highest improvement in strength of 41% and 110% over rolled and sintered condition,

respectively. In addition, the same composition has recorded 157% improvement in toughness in

annealed condition, as compared to rolled condition. Uniformly distributed BNNTs restricted

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