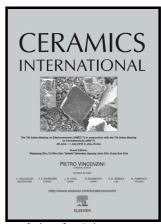
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ACCEPTED MANUSCRIPT

Controllable Synthesis and Growth Mechanism of Lead free Bismuth Sodium

Titanate Nanowires

Cheng Cheng^a, Zhuo Han^a, Yuzhe Liu^{b,c}, Junye Cheng^{a,d}, Junhe Yang^{a*}, Xianying Wang^a, Guangping Zheng^{a,b*}

^aSchool of Materials Science and Engineering, University of Shanghai for Science and Technology, Shanghai 200093, China

^bDepartment of Mechanical Engineering, Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong, China

^cDepartment of Materials Engineering, Auburn University, Auburn, Alabama, U.S.A

^dCenter of Super-Diamond and Advanced Films (COSDAF), Department of Physics

and Materials Science, City University of Hong Kong, Hong Kong, China

Abstract:

Highly uniform lead-free piezoelectric bismuth sodium titanate (Na_{0.5}Bi_{0.5}TiO₃, BNT) nanowires were successfully synthesized *via* a hydrothermal method. Synthesized at a stirring speed range of 300-1000 rpm, the compositions and orientations of BNT nanowires were well controlled. The effects of stirring speeds on the formation of BNT nanoparticles and nanowires in the hydrothermal processes were systematically investigated. The BNT nanowires with a high aspect ratio were proven to be single crystals with [110] growth direction from high-resolution TEM analysis. The mechanism of growth of BNT nanowires out of nanoparticles in the

^{*}jhyang@usst.edu.cn

^{*}mmzheng@polyu.edu.hk

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