Advancement of bismuth layer structured ferroelectrics through substitution / doping and other processing

Yun Wu¹, Steven J. Limmer and Guozhong Cao*
Department of Materials Science and Engineering, University of Washington, Seattle, WA 98195, USA
*E-mail: gzcao@u.washington.edu

Abstract

This article reviews the studies on bismuth layer structured ferroelectrics (BLSFs), focusing on the most widely reported strontium bismuth tantalate niobate \( \text{SrBi}_2(\text{Ta, Nb})_2\text{O}_9 \) (SBTN) and bismuth titanate \( \text{Bi}_4\text{Ti}_3\text{O}_{12} \) (BIT) systems. Through partial substitution or doping, the crystal structure, microstructure and electrical, dielectric and ferroelectric properties of BLSFs could be appreciably modified. In addition, the crystalline orientation, grain size effect, and post-annealing effects on the ferroelectric properties are discussed.

¹ Present address: Advanced Micro Devices Inc. Sunnyvale, CA 94086, USA. E-mail: wayun33@hotmail.com

Correspondence/Reprint request: Dr. Steven J. Limmer, Department of Materials Science and Engineering, University of Washington, Seattle, WA 98195, USA