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**The Effect of Electric Field on Multiferroic $Ba_{0.5}Sr_{1.5}Zn_2(Fe_{0.92}Al_{0.08})_{12}O_{22}$ Investigated by NMR** SANGIL KWON, SOONCHIL LEE, Department of Physics, KAIST, Daejeon 305-701, Republic of Korea, YI SHENG CHAI, SAE HWAN CHUN, KEE HOON KIM, CENSCMR, Department of Physics and Astronomy, Seoul National University, Seoul 151-747, Republic of Korea, BYEONGKI KANG, CHANGSOO KIM, EUNA JO, Department of Physics, KAIST, Daejeon 305-701, Republic of Korea — Multiferroic helimagnet $Ba_{0.5}Sr_{1.5}Zn_2(Fe_{0.92}Al_{0.08})_{12}O_{22}$ (Al-BSZFO) shows extremely high magnetoelectric susceptibility so that the critical field for switching electric polarization is less than 1 mT below 90 K [1]. Recently, a large macroscopic magnetization was successfully induced by the electric field ($\pm 2$ $\mu_B$/f.u. by $\pm 2$ MV/m) in properly annealed Al-BSZFO [2]. To reveal the microscopic origin, a study on the magnetic domain structure is needed. In the magnetic material, NMR intensity is enhanced by the coupling between the electron magnetic susceptibility and the nuclear magnetic susceptibility. Hence if we trace out the amount of NMR intensity enhancement, we would get the information of the magnetic domain configuration. By measuring both the magnetic field and the electric field dependence of NMR intensity enhancement, we found the area of the magnetic domains is actually tuned by the electric field. [1] S. H. Chun et al., Phys. Rev. Lett. 104, 037204 (2010). [2] K. H. Kim, The 19th International Conference on Magnetism (2012); Y. S. Chai et al., unpublished.

Sangil Kwon
Department of Physics, KAIST, Daejeon 305-701, Republic of Korea

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