

 MLF Experimental Report	Date of Report Oct 7, 2013
Project No. 2012A0007 Title of experiment The spin structure study of the single crystal BiFeO ₃ under high magnetic field Name of principal investigator Seongsu Lee Affiliation Korea Atomic Energy Research Institute KOREA	Name of person responsible for instrument Kenichi Oikawa Name of Instrument/(BL No.) BL10 Date of Experiment Oct 28, 2012 – Nov 3, 2012

Please report your samples, experimental method and results, discussion and conclusions. Please add figures and tables for better explanation.

1. Name of sample(s) and chemical formula, or compositions including physical form.
<p>1. Sample Name: BiFeO₃ single crystal</p>

2. Experimental method and results. If you failed to conduct experiment as planned, please describe reasons.
<p>We studied how the magnetic structure of BiFeO₃(BFO) changes as functions of high magnetic field (about 30 Tesla) at low temperature. The BFO have three magnetic domains due to the spiral magnetic ordering with modulation vector $\tau=(0,0.0045,0)$ According to this experiment, the high magnetic field of 25 Tesla destroy the incommensurate magnetic structure of BFO. We observe for the first time the three magnetic domains become one magnetic domain with applying 25 Tesla at 77K.</p>