



Contribution ID: 16

Type: **Submitted oral (online)**

Nano-strain induced ferromagnetism in epitaxial thin films of bismuth ferrite

Friday 29 November 2024 11:15 (12 minutes)

The existence of an uncompensated magnetic order in epitaxial thin films of multiferroic bismuth ferrite (BiFeO₃ or BFO) is still the subject of intense debate. The Time Differential Perturbed Angular Correlation (TDPAC) technique monitors local fields at the atomic scale without altering the structure of the investigated materials. Using such an approach, we observed that BFO epitaxial thin films exhibit local ferromagnetic order at the unit cell level. TDPAC data obtained at room temperature with the ¹¹¹mCd probe show that the strong magnetic field (~ 5 Tesla) exists at the non-magnetic sublattice (Bi site). It is assumed that the nano-strain resulting from the mismatch between the substrate and the BFO thin film produces a non-zero net local magnetisation of the sample.

Author: KVIATKOVSKIY, Danylo (Solid State Physics group at ISOLDE-CERN and Faculty of Radio Physics, Electronics and Computer Systems, Taras Shevchenko National University of Kyiv (UA))

Co-authors: DANG, Thanh Thien (Institut Fur Materialwissenschaft Universität Duisburg-Essen (DE)); IPEK, Efe (Department of Materials, ETH Zurich); TRASSIN, Morgan (Department of Materials, ETH Zurich); SCHELL, Juliana (Institut Fur Materialwissenschaft Universität Duisburg-Essen (DE))

Presenter: KVIATKOVSKIY, Danylo (Solid State Physics group at ISOLDE-CERN and Faculty of Radio Physics, Electronics and Computer Systems, Taras Shevchenko National University of Kyiv (UA))

Session Classification: Recent Experimental Results III