Multiferroic BiFeO$_3$ (BFO) thin films have been deposited on SRO buffered Pt/TiO$_2$/SiO$_2$/Si substrates by rf sputtering. Effects of the surface morphology of the SRO buffer layers have on the crystallization, surface morphology and electrical properties of BFO thin film have been investigated. SRO buffer layer of larger grain is able to effectively promote the growth of multiferroic BFO thin films with less structural defects. Phase identification and surface morphology studies reveal that the larger grain SRO buffer layer, formed by sputtering thicker SRO film, is able to promote the formation of better crystallized BFO films. Leakage current of the BFO films have also been improved for the BFO films deposited on smaller grain SRO buffer layer.

Miss Zheng Rongyan obtained her Bachelor of Science Degree (2$^{nd}$ Upper Class Honors) in Materials Science Department at National University of Singapore in 2005. She is currently a Master student in the department of NUS Nanoscience & Nanotechnology Initiative under supervision of Prof John Wang of Materials Science and Engineering and Prof Seeram Ramakrishna of Mechanical Engineering. Her research interests focus on multiferroic thin films and piezoelectric nanofibers.