

Abstract Submitted  
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**Epitaxial growth of BiFeO<sub>3</sub> thin films on SrTiO<sub>3</sub>/Si substrates<sup>1</sup>**

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Marcos — We are using molecular beam epitaxy (MBE) to grow BiFeO<sub>3</sub> (BFO)  
thin films. SrTiO<sub>3</sub> (STO) on Si is used as a virtual substrate to enable the growth  
of BFO. Commensurate growth of STO on Si using MBE has been achieved by using  
co-deposition with the fluxes adjusted for stoichiometric growth and the growth rate  
is determined using RHEED intensity oscillations. The native oxide of the Si sub-  
strates is removed in-situ by deoxidation at around 750 ° C using a flux of Sr. The  
substrate is cooled to 500 ° C and additional Sr is added to form template with a  
(2x1) surface structure. BFO is then deposited on well-characterized STO (2-20nm  
thick) on Si using Fe and oxygen plasma with an overpressure of Bi flux- the growth  
rate being controlled by the incoming Fe flux. The RHEED pattern taken during  
deposition of BFO shows 2-D growth front with a 6-fold surface reconstruction. The  
structural and magnetic properties of the BFO samples have also been measured.

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