

## Abstract

Magnetoelectric multiferroics are materials which exhibit co-existing magnetic and ferroelectric phases, with coupling between magnetic and electric ordering. These have become a very hot area of research in the past decade or so; mainly due to their novel physical properties and applications in data storage devices, sensors and spintronics. The project investigates the multiferroic properties of double perovskite  $\text{Y}_2\text{NiMnO}_6$  in bulk as well as polycrystalline thin films.  $\text{Y}_2\text{NiMnO}_6$  has been shown theoretically to be polar in its magnetic ground state with an intrinsic polarization comparable with other magnetically-driven ferroelectrics like  $\text{TbMnO}_3$ ,  $\text{TbMn}_2\text{O}_5$ ,  $\text{HoMnO}_3$ . [1]. To investigate these properties the bulk sample was prepared by using solid state synthesis and thin film of the material were deposited on different substrates using pulsed laser deposition method. Characterization of material was done by x-ray diffraction, atomic force microscopy and piezoresponse force microscopy.