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**ABSTRACTS**



**GR-14. Neutron diffraction and dielectric anomalies in  $YMn_{2-x}Fe_xO_5$**   
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Multiferroic  $YMn_{2-x}Fe_xO_5$  ( $x=0.00, 0.01, 0.02, 0.04$ ) system has been studied by neutron diffraction. In  $YMn_2O_5$ , the temperature dependence of lattice parameters shows discontinuous jump at 19 K, which is the same point obtained from dielectric constant curve. Obviously, the Mössbauer electric quadrupole splitting value was changed from 0.35 to 0.43 mm/s at 19 K for  $YMn_{1.99}Fe_{0.01}O_5$ . We present that the change of lattice and Mössbauer parameters occurs simultaneously with the anomaly of dielectric constant.

The neutron diffraction patterns and Mössbauer spectra of the  $YMn_{2-x}Fe_xO_5$  were observed at 54 K. The neutron diffraction patterns and Mössbauer spectra of the  $YMn_{2-x}Fe_xO_5$  have been taken at various temperatures ranging from 4.2 K to room temperature. The crystal structure of all samples was found to be an orthorhombic structure ( $Pbam$ ) and lattice parameters of  $YMn_2O_5$  were  $a_0 = 7.238(9)$  Å,  $b_0 = 8.459(5)$  Å,  $c_0 = 5.650(6)$  Å at 4.2 K by neutron diffraction. In  $YMn_2O_5$ , the temperature dependence of lattice parameters shows discontinuous jump at 19 K, which is the same point obtained from dielectric constant curve. Obviously, the Mössbauer electric quadrupole splitting value was changed from 0.35 to 0.43 mm/s at 19 K for  $YMn_{1.99}Fe_{0.01}O_5$ . We present that the change of lattice and Mössbauer parameters occurs simultaneously with the anomaly of dielectric constant.