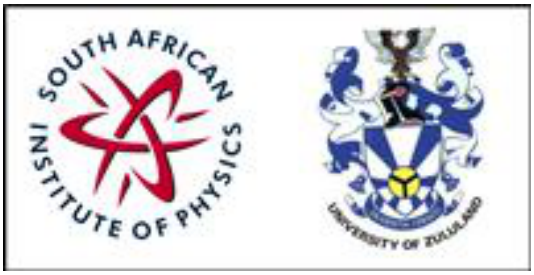


Contribution ID: **561** Type: **Poster Presentation**

# Magnetic Symmetry for Hexagonal Manganite RMO3

*Tuesday, 9 July 2013 17:40 (1 hour)*

## Abstract content <br>   (Max 300 words)

We study the symmetry of hexagonal manganite RMO3 ( R = Sc, Y, Ho, Er, Tm) at room temperature with non-magnetic space group P63mc and below the transition temperature TN = 7 0 ...130 K with magnetic space groups ( P6'3cm, P6'3c'm, P6'3 ) for parallel and (P63c'm', P63cm, P63) for anti-parallel orientation in planar -triangular structures. We calculate and tabulate the irreducible representations and the co-representations of non-magnetic and magnetic space groups respectively at high symmetry points and lines throughout the fundamental domain in the Brillouin zone. These irreducible representations and co-representations are the starting point in calculations of the coupling coefficients. They are also needed for structure elucidation in X-ray, electron and neutron diffraction experiments. The coupling coefficients are used in the calculation of material tensors, like Raman scattering tensors, Brillouin scattering, morphic effects in crystals, as well as non-linear magneto-optical properties. The selection rules and wave vector selection rules for these space groups are given.

## Apply to be<br> considered for a student <br>   award (Yes / No)?

No

## Would you like to <br> submit a short paper <br> for the Conference <br> Proceedings (Yes / No)?

Yes

**Primary authors:** Dr MACHATINE, Augusto (University of Pretoria); Mr NIYONGABO, Prime (University of Pretoria)

**Presenters:** Dr MACHATINE, Augusto (University of Pretoria); Mr NIYONGABO, Prime (University of Pretoria)

**Session Classification:** Poster1

**Track Classification:** Track A - Division for Condensed Matter Physics and Materials