Contribution ID: **128** Type: **Poster Presentation**

Red emission of Pr3+ enhancement by addition of Ba2+ and In3+ in CaTiO3:Pr phosphor

Wednesday, 13 July 2011 17:00 (2 hours)

<p>CaTiO3 exhibits a Perovskite structures that has an ABO3 stochiometry where A and B represent metal cations with a combined charge of 6+ valency and O with 6- valency, and thus bring about charge neutrality to the compound. Upon introducing Pr3+ ions in the site of Ca2+ ions, charge imbalance occurs by introducing a 7+ valency, and this force the material to compensate for this effect by introducing negative Ca Ti vacancies, and positive O vacancies. These act by hampering the material luminescence. Thus substitution of Ti4+ by co-doping with Ba2+ and In3+ ions result into a 6+ valency and thus an electrically neutral compound. This reinforces the red emission of Pr3+ ions inside CaTiO3. CaTiO3: Pr3+ exhibiting red emission is synthesized via solid state reaction, and its luminescence is enhanced by co-doping with Ba2+ and In3+ that act as charge compensators. This optimal emission of CaTiO3:Pr3+,Ba2+,In2+ is achieved by solid state reaction at 1300 oC for 4h, by direct firing, according to 1:1 molar ratio of TiO2 Anatase and CaCO3 compounds, doping with 0.3 mol

Level (Hons, MSc,
   PhD, other)?

MSc

Consider for a student
   award (Yes / No)?

Yes

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

Yes

Primary author: Mr NOTO, Luyanda Lunga (University of Free State (Student))

Co-authors: Prof. SWART, HC (University of Free State); Prof. TERBLANS, JJ (University of Free State); Prof. NTWAEABORWA, OM (University of Free State); Dr PITALE, Shreyas (University of Free State)

Presenter: Mr NOTO, Luyanda Lunga (University of Free State (Student))

Session Classification: Poster1

Track Classification: Track A - Condensed Matter Physics and Material Science