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Analysis of green emitting Tb³⁺ activated BaAl₂O₄ /CaAl₂O₄/AlHO₂/ Tb₂O₃/TbAlO₃ mixed phases nanophosphors prepared via citrate sol-gel method

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BaAl₂O₄ /CaAl₂O₄/AlHO₂/Tb₂O₃/TbAlO₃:x% Tb³⁺ (0 ≤ x ≤ 1.9) mixed phases nanophosphors were developed using sol-gel synthesis. The phase quantification of the XRD results indicated that the mixed phases are composed of the hexagonal (BaAl₂O₄, CaAl₂O₄), orthorhombic (AlHO₂, TbAlO₃) and cubic (Tb₂O₃) crystal structures. SEM results showed the presence of the nano which enlarged with the increase in Tb³⁺ concentration. TEM confirmed the presence of nanorods. Photoluminescence (PL) results depict emission peaks at 380, 415, 435, 458, 488, 542, 586 and 622 nm attributed to 4f-4f Tb³⁺ transitions 5D₃→7F₆, 5D₃→7F₅, 5D₃→7F₄, 5D₃→7F₃, 5D₄→7F₆, 5D₄→7F₅, 5D₄→7F₄, and 5D₄→7F₃, respectively. Commission Internationale de l'éclairage (CIE) shows that the Tb³⁺ doped samples emitted the green colour

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

PhD

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