

SYNTHESIS OF TUNGSTATES NANOPARTICLES WITH LUMINESCENT PROPERTIES

Reference	Presenter	Authors (Institution)	Abstract
02-011	RENAN PAES MOREIRA	MOREIRA, R.P. (Instituto de Pesquisas Energéticas e Nucleares); Felinto, M.C. (Instituto de Pesquisas Energéticas e Nucleares); Brito, H.F. (Universidade de São Paulo);	Nanomaterials doped with rare earth ions have attracted great attention due to their unusual optical and electronic properties which leads these materials to be looked at as potential materials for application in the fields of high performance luminescent devices, lighting, magnets, catalysts, medical diagnostics, markers biological luminescent, etc. The advantages of using lanthanide ions as luminescent markers are numerous: it is a safe, low cost method, has higher specificity, the tests are more sensitive and the luminescence can be measured quickly, with a high degree of sensitivity and accuracy. [1-3] Among the methods used in obtaining nanocrystals can be mentioned: coprecipitation, sol-gel, microemulsion, microwave, polymer precursor, among others. In recent years, the polymer precursor (Pechini) and combustion methods are being used with greater emphasis due to the race to obtain nanoparticulate compounds, with homogeneous morphology in order to improve the performance of luminescent materials with application in nanotechnology. The Ba(1-x)WO ₄ :xEu ³⁺ powders were synthesized using the Pechini method, where the solutions of the salts of the Ba ²⁺ and Eu ³⁺ precursors in the form of NO ₃ ions. The 1: 4 citric acid and ethylene glycol solutions were added in the form of heat and heat to form a polymer resin, the pH being adjusted to 7 with ammonium hydroxide so that a brown, transparent resin . This resin was heated at 300°C for 2 hours, resulting in a black mass, which was prepared for the preparation of the precursor in powder form. The precursor was calcined at a preset temperature of 900°C for the production of barium tungstate [1] SANTRA, S.; ZHANG, P.; WANG, K.; TAPEC, R.; TAN, W. Conjugation of biomolecules with luminophore-doped silica nanoparticles for photostable biomarkers. Analytical Chemistry, v.73, n.20, p.4988-4993, 2001. [2] G. Wang, Q. Peng, Y. Li, Lanthanide- doped nanocrystals: synthesis, optical-magnetic properties, and applications, Acc. Chem. Res. 44 (2011) 322–332. [3] A.-W. Xu, Y. Gao, H.-Q. Liu, The preparation, characterization ,and their photocatalytic activities of rare earth doped TiO ₂ nanoparticles, J. Catal. 207 (2002)151–157, http://dx.doi.org/10.1006/jcat.2002.3539 .