Synthesis and characterization of neodymium acetate for use in nanotechnology

Carlos Alberto Da Silva Queiroz[1]

[1]Instituto de Pesquisas Energéticas e Nucleares (*CCTM*)

e-mail: casqueiroz@hotmail.com

A simple and economical chemical process to obtaining neodymium acetate of high purity was studied. The raw material in the form of mixed rare earths carbonate comes from Brazilian monazite. It was used the technique of strong cationic exchange resin, proper to water treatment to the neodymium''s fractionation and it is achieved a purity of 99.9% in Nd_2O_3 and yield greater than or equal 80%, with the elution of rare earths by EDTA solution in pH controlled. The complex of EDTA-neodymium is transformed in neodymium oxide, subsequently the oxide is dissolved in acetic acid to obtain the neodymium acetate. The solid salt was characterized via chemical analysis, thermal analysis, X ray diffraction, infrared spectroscopy and inductively coupled plasma mass spectrometry to certify the purity.The analytical data collected allowed to conclude that the stoichiometric formula for the compound is **$Nd(CH_3COO)_3.1.5H_2O$.** The typical neodymium acetate obtained (purity ≥ 99.9%) contain the followings contaminants in micrograms per gram: Y(0.9), Sc (5.1), La (1.0), Pr (3.4), Sm (12.8), Eu (1.1), Gd (15.4), Tb (2.9), Dy (5.3), Ho (7.4) Er(1.5), Tm (0.3),Yb (2.5), Lu (1.0).

References

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