

nuclear reactor at IPEN – CNEN/SP (Brasil). These data increase the knowledge of its inorganic components and can introduce improvements in the production of these extracts, mainly as regards to toxicity.

PERFORMANCE OF NEUTRON ACTIVATION ANALYSIS IN THE EVALUATION OF BISMUTH IODIDE PURIFICATION METHODOLOGY P63

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Bismuth tri-iodide (BiI_3) is an attractive material for using as a semiconductor. The behavior of semiconductor devices is strongly influenced by the presence of impurities or contaminants remaining due to incomplete purification of the semiconductor material. BiI_3 has emerged as a particularly interesting material in view of its wide band gap (1.7eV), large density (5.7g/cm^3), high atomic number elements ($Z=68$) and high resistivity ($>10^9 \Omega\cdot\text{cm}$). The BiI_3 crystals have been grown by the vertical Bridgman technique using commercially available powder. In this case, the BiI_3 powder was purified three times and, at each purification, the crystal was evaluated by systematic measurements of reduction of impurities, crystalline structure, stoichiometry and surface morphology. The purification efficiency was assessed by analyzing the crystals, through Instrumental Neutron Activation Analysis (INAA). INAA is the elemental analysis method usually chosen for these projects because of some features such as: small amount of sample available, minimal sample handling and high sensitivity for many elements. The analyzed crystals came from the impurity reduction process occurred after each purification by the Repeated Vertical Bridgman method. The results showed that INAA was a special analytical technique to identify and quantify the impurities (Ag, As, Br, Cr, K, Mo, Na and Sb) in the BiI_3 crystals and to evaluate the reduction of the trace impurities, after each purification step.

This work was presented at International Nuclear Atlantic Conference – 22 ENAN 2015 (poster)
