DETERMINATION OF THE IMPURITIES CONCENTRATION IN TUNGSTEN, MOLYBDENUM, TIN, AND TELLURIUM TARGETS USING NEUTRON ACTIVATION ANALYSIS TECHNIQUES

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The fast and k_0-neutron activation analysis (k_0-NAA)methods were used to investigate the radioimpurities concentration of ^{124}Sb, ^{134}Cs, ^{60}Co, ^{87}Rb, ^{182}Ta, ^{233}Pa, ^{65}Zn, ^{56}Fe, ^{110m}Ag, ^{51}Cr, ^{95}Zr, ^{75}Se and ^{114m}In in the target samples WO_3, MoO_3, SnO_2 and TeO_2 which are needed for radioisotopes ^{188}Re, ^{99m}Tc, (^{113m}In and ^{117m}Sn) and ^{131}I production respectively at the Second Egyptian Research Reactor (ETRR-2). Experimental data, procedures and theoretical treatments were described. The concentrations of radioimpurities were determined and their sources either neutron capture reactions, or threshold reactions or both were identified. The accuracy of the determined concentrations was checked using the IAEA Soil-7 reference sample.

Keywords: impurities, concentration, isotope, fast neutron flux, specific activity, threshold reactions, k_0-neutron activation analysis, neutron spectrum parameters.