

## Review of K0-Factors and Related Nuclear Data of the Selected Radionuclides for Use in K0-NAA

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**Abstract :** The k0-factors and related nuclear data, i.e. the Q0-factors and effective resonance energies ( $\bar{E}_r$ ) of the selected radionuclides which are used in the k0-based neutron activation analysis (k0-NAA), were critically reviewed to be integrated in the "k0-DALAT" software. The k0- and Q0-factors of some short-lived radionuclides: 46mSc, 110Ag, 116m2In, 165mDy, and 183mW, were experimentally determined at the Dalat research reactor. The other radionuclides selected are: 20F, 36S, 49Ca, 60mCo, 60Co, 75Se, 77mSe, 86mRb, 115Cd, 115mIn, 131Ba, 134mCs, 134Cs, 153Gd, 153Sm, 159Gd, 170Tm, 177mYb, 192Ir, 197mHg, 239U and 239Np. The reviewed data as compared with the literature data were biased within 5.6-7.3% in which the experimental re-determined factors were within 6.1 and 7.3%. The NIST standard reference materials: Oyster Tissue (1566b), Montana II Soil (2711a) and Coal Fly Ash (1633b) were used to validate the new reviewed data showing that the new data gave an improved k0-NAA using the "k0-DALAT" software with a factor of 4.5-6.8% for the investigated radionuclides.

**Keywords :** neutron activation analysis, k0-based method, k0 factor, Q0 factor, effective resonance energy

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