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Simulation and Modeling of Uncertainties in the Calibration of a Fluorescence Chemical Spectrometer (FRX)

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Abstract : Sensitivity analysis and uncertainty estimation are of major importance for the declaration of conformity of finished products. Models must be sought to analyze the test data. The main objective of this work is to establish reliable models to analyze our experimental data and validate them. So we have studied and used the Monte Carlo and Bootstrap simulation methods, we have been able to realize programs that calculate the uncertainty according to the ISO 8466 standard on X-ray fluorescence spectrometer samples from the URASM CRTI chemical analysis laboratory. Programs and interfaces are made with Matlab (GUI).

Keywords : Simulation; uncertainties; Monte carlo; Bootstrap; calibration