

LIBS quantitative analysis by Time-Independent C-sigma (TIECS) curve method

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Quantitative analysis by LIBS usually suffers from inadequacy of the calibration curves, which are often built starting from a limited number of standards. Even when the standards are available, some of them would not be used because they would lay in the non-linear region of the calibration curve.

The Time-Independent C-sigma (TIECS) curve method, recently proposed by our group in Pisa [1], allows to build a linear multi-line, multi-elemental, time independent universal calibration curve, which can be used for determining the composition of unknown samples in a wide concentration range, starting from a very few standards. The TIECS method relies on the acquisition of several time-resolved LIBS spectra in a temporal interval in which the hypothesis of a homogeneous, stationary plasma in Local Thermal equilibrium is fulfilled.

If the composition of the standard(s) is known, information can be gathered on important spectral parameters as Stark broadening coefficients and transition probabilities.

Examples will be given on the different possible applications of the TIECS method.