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Paper: Laser-induced breakdown spectroscopy application to control of the process of precious metal recovery and recycling

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Abstracts: In this paper, we discuss the application of laser-induced breakdown spectroscopy to precious metal alloys used for the control of the process of recovery and recycling of scraps and waste of industrial processes. In particular, the possibility to obtain sensitivity and trueness comparable to the current systems used in industrial environment in the quantitative determination of the elements of interest was explored. The present study demonstrates that laser-induced breakdown spectroscopy can be considered as a viable alternative to inductively coupled plasma optical emission spectrometry and X-ray fluorescence spectroscopy for the determination of recovered precious metals. The limits of detection obtained are of the order of 0.2 mg/g for all the elements considered. The maximum deviation with respect to the nominal concentrations is around 1 mg/g at concentrations around 20 mg/g (gold) corresponding to a relative error slightly higher than $\pm 5\%$.