**Characterization of plasma emission generated by nanosecond and femtosecond laser pulses in ferritic stainless steel standards**

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Laser-induced breakdown spectroscopy ( LIBS ) denotes a technique where a pulsed laser beam is focused in a sample whose surface is ablated . The characteristic optical emission from the plasma, created by the interaction between the laser and the target, are composed mainly by emission lines of the excited species in the laser-generated plasma. In this work, samples of ferritic stainless steel were used to create plasmas under nanosecond and femtosecond laser excitation. A nitrogen laser was used to generate the nanosecond pulses and a Al2O3. The emission lines coresponded to Fe, Cr and some other impurities present in the iron standard. With time integrated emission technique , some lines were recorded in a integrated spectrum and it was possible to determine the electron excitation temperature using Boltzmann plot technique while it was possible to measure the electron density by the Stark broadening effect . The evaluation of temperature can be also employed by the ratio method but some transitions have better values than others. The temperatures are higher for femtosecond excitation and densities are higher for nanosecond case.
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