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Laser Induced Fluorescence on Molecular Discharges HJALMAR MULDERS, ARIJ RIJKE, VINCENT GIRAULT, WINFRED STOFFELS, Eindhoven University of Technology — In the last half century, mercury has been used widely as the radiating species in many low pressure fluorescent lamps. Mercury primarily radiates at 254 nm and 185 nm. These photons excite a phosphor that fluoresces back to the ground state producing visible photons. This process reduces the efficiency because much of the energy of the UV photons has to be discarded. Using a species that emits light closer to or even in the visible range reduces these losses. Ideally the species (or a mixture of several species) should build up the whole visible spectrum, much like in HID lamps. InBr seems to be a good candidate for such a lamp, because it is an efficient radiator that emits most of its light around 370 nm; much closer to the visible part of the spectrum. In order to get insight in the energy transfer processes going on in these molecules we have conducted a laser induced fluorescence (LIF) experiment on InBr vapour and on a plasma. We have measured the decay times of different rovibrational levels of the InBr-molecule as well as the spectral distribution of the fluorescence from these levels. From the former we calculated the rotational temperature of the plasma and from the latter we calculated the Franck-Condon factors for the A-state as well as the vibrational temperature.

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