

Light-Induced Atomic Desorption (LIAD)

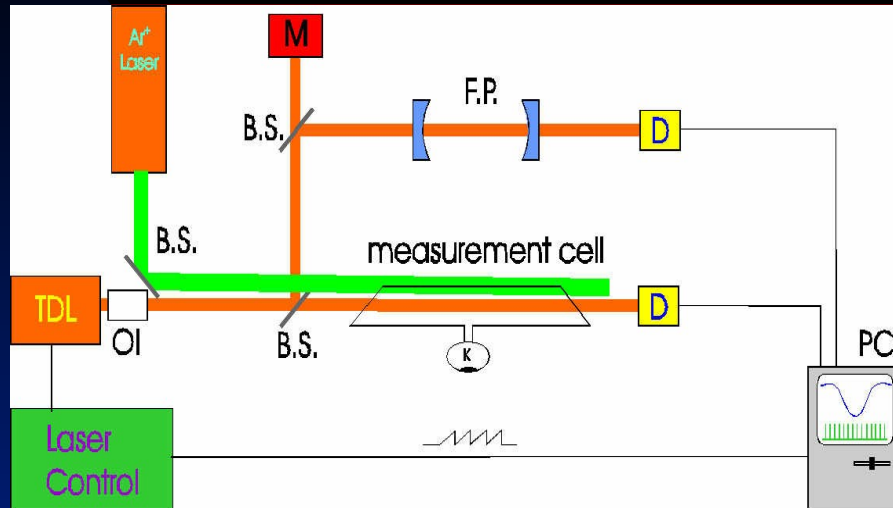
Nonlinear Quantum Optics Group, Task C7

The “LIAD” Effect (Light-Induced Atomic Desorption) has been casually observed by Prof. Adriano Gozzini's group in Pisa in 1992 in polymer-coated measurement cells.

A non-resonant radiation produces atomic (alkali) photoemission from polymeric (porous) surfaces: Na, Rb e Cs from PDMS (polydimethyl-siloxane, OCT (octamethyl-cyclo-tetrasiloxane) and paraffin.

This means a high atomic vapor concentration in a closed cell even at room temperature and therefore more efficient fluorescence lamps (Na).

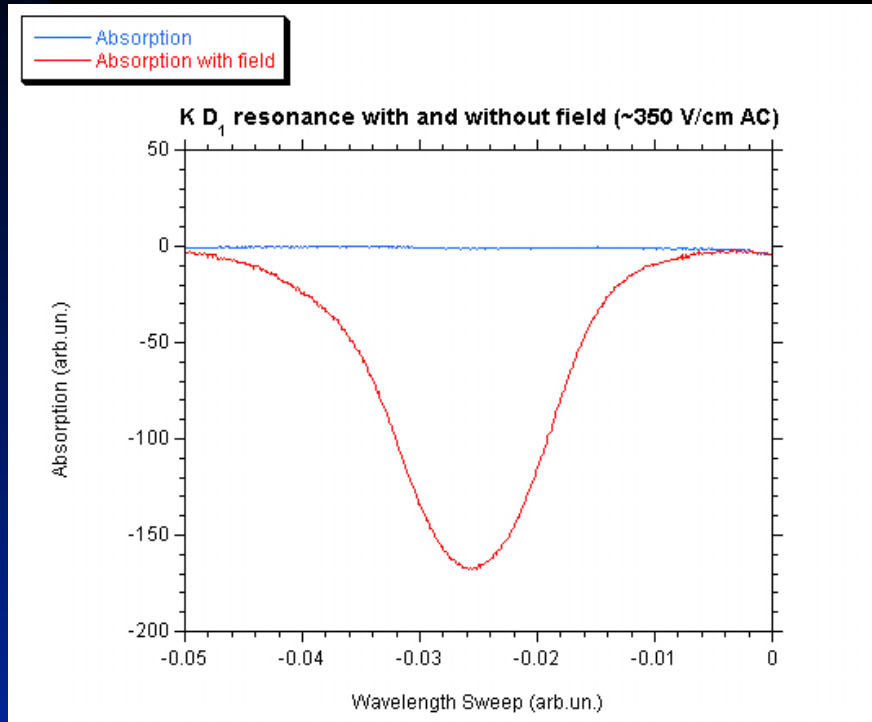
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- The effect has been monitored by diode laser absorption spectroscopy on the potassium D₁ line at 770 nm;

- The process is influenced by atom diffusion inside the polymer;

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It increases at lower flooding light wavelength;

The effect is huge when an alternate field (50 Hz) is created directly inside the glass cell (see Fig.).