ELECTRONIC SYSTEM

TOULOUSE TECH TRANSFER

Simultaneous atomic absorption analysis of multiple elements

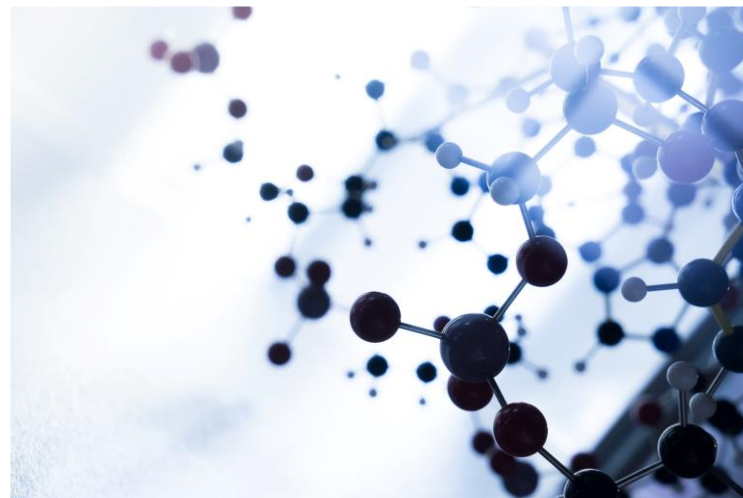
Thin layer deposition processes modifies substrate physical properties. For critical applications the most efficient atomic control is required. In this way, microelectronic tools need non-destructive in-situ characterization tool to control variations of the deposition steps under a very high vacuum. Several optical measurement systems have been developed but they are complex, expensive, and difficult to implement by non-specialists.

DESCRIPTION*

The technological solution developed allows the simultaneous measurement of several atomic flow in a simple and robust way. For each element, a hollow cathode lamp emits several specific lines to the chosen element, and one or more of emitted lines are detected by a 1D spectrometer.

The instrument consists of:

- Luminous objects such as cathode lamps at the wavelengths of the materials of interest
- A double core optical fiber
- A 1D spectrometer
- Real-time image processing software



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TECHNICAL SPECIFICATIONS

Measurement time	Few millisecond to several hours
Sampling frequency	10 Hz
Light source	Direct, unchopped
Spectrometer	1D

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COMPETITIVE ADVANTAGES

- Robust implementation
- Simultaneous measurement of several elements flows
- The intensity drifts of the lamps, and the optical path drifts due to slow thermal variations are measured and considered

APPLICATIONS

- Microelectronics equipements:
  - Epitaxy (MBE, MOCVD…)
  - Thin layer deposition (CVD, Evaporation)

INTELLECTUAL PROPERTY

- Patent deposited

DEVELOPMENT STAGE

- Experimental proof of concept

LABORATORY

CONTACT

T. +33 (0)5 62 25 50 60
systemes@toulouse-tech-transfer.com
www.toulouse-tech-transfer.com