

Method and device for measuring properties of semiconductors' physical layers



IP STATUS: Patent application

COMMERCIALIZATION FORM: Patent sale, Implementation Agreement, Licensing, Other Agreement

TECHNOLOGY READINESS LEVEL:
Technology validated in laboratory environment

TECHNOLOGY DESCRIPTION:

The measurement is based on the illumination of a very narrow light or with a very wide spectrum of the semiconductor layer during its deposition. The substrate on which it is set the semiconductor layer during the process is located in traffic. As a result of the interaction of a light beam with a semiconductor layer the shape of the characteristic changes spectral light. By analyzing the change in the shape of the light spectrum physical parameters can be determined. Measurement device used for the above the measurement method is designed for operation with reactors in which the substrate is in a cyclical movement when depositing semiconductor layers.

MARKET APPLICATION:

The device can be applied to the integrated circuits production processes such as LEDs, transistor, lasers, photovoltaic cells, processors at different technological stages. The invention can be used to analyze the produced semiconductor layers in situ on different substrates. By performing measurements during the process basic semiconductor layers' parameters can be determined e.g: thickness, homogeneity, energy gap, degree of the admixtures, which translate into the produced semiconductor. In addition, it is possible to produce a map of the distribution of analyzed parameters of semiconductor layer.

INNOVATION/MARKET ADVANTAGES:

- Process waste reduction through analysis homogeneity of the produced semiconductor layer resulting from inhomogeneous process conditions;
- Technological problems detection at a very preliminary stage;
- Market availability of the device - available on the market there are mainly devices from foreign manufacturers, which also translates into a high price;
- Possibility to determine simultaneously many very important parameters of semiconductor's layer parameters;
- Broad spectral measurements as opposed to narrowly spectral measurements or spotlights are able to be observed anomalies from the technological process e.g. increased level of contamination of reagents.

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