

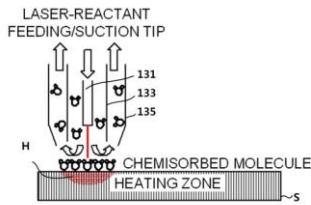


# APPARATUS FOR SELECTIVELY DEPOSITING ATOMIC LAYER FOR LOCAL AREA ON THE SUBSTRATE

**Affiliation :** Korea university **Type of Partnership :** Open for negotiation **Cost :** Open for negotiation

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<A drawing graphing the operation control mode about the opening/closing valve of each gas lines connector module>

## Abstract

It is related to the part atomic layer selection thin film deposition apparatus. More specifically, it is about the apparatus for making the atomic layer deposition at the topical face possible uses the nozzle with heating up the local area of the substrate using the laser.

## Problems with Existing Technology

According to the semiconductor process was fined and the thickness of the thin film thinned down, a precise control was required.

- In order that such limit of CVD was overcome in the part which was various with the dielectric layer of the semiconductor device, the protective layer of the conductor of the liquid crystal display device or the electroluminescent thin film display, transparent the atomic layer method was proposed as the method for forming the thin film having the thickness which was minute of the atomic layer unit.

## Technology Readiness Level

TRL 4 : Technology validated in lab

TRL1	TRL2	TRL3	TRL4	TRL5	TRL6	TRL7	TRL8	TRL9
Basic Technology Research	Technology Concept formulated	Experimental Proof of Concept	Technology validated in lab	Technology validated in relevant environment	Technology demonstrated in relevant environment	System Prototype in operational environment	System complete & qualified	Full commercial application

## Differentiation and effect

### Differentiation

**Apparatus for selectively depositing atomic layer for local area on the substrate**

- It makes the selective heating of the local domain through the laser core.
- It is able to make the compact configuration of the combination nozzle unit possible through the coaxial concentric structure with the laser core and the common supply section and suction section.

### Effect of Technology

**Compact configuration of the combination nozzle unit**

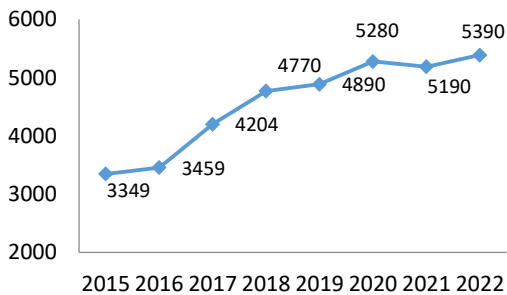
- The part atomic layer selection thin film deposition apparatus takes the coaxial concentric structure the laser core, and the common supply section and suction section and it is able to make the compact configuration of the combination nozzle unit possible.

## APPARATUS FOR SELECTIVELY DEPOSITING ATOMIC LAYER FOR LOCAL AREA ON THE SUBSTRATE

### Technology Application Field

It can be used in field such as producing general semiconductor device.

### Market trends



Gartner, 2019

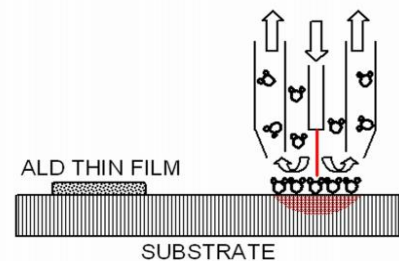
<Global semiconductor market>

- The global semiconductor market reached USD 489 billion in 2019 and it increased by 2.6% compared to USD 477 billion of last year.
- In 2022, it is expected to increase to USD 539 billion and will grow continuously.

### Technology Implementation

#### Method for making for photocatalyst membrane

- In the reaction chamber, it is possible to place the other component on in the internal space of the reaction chamber.
- Through the connection with the fuzzy gas supply part of gas supply part, the reaction chamber can make the formation of inside mood and adjust the pressure state of the reaction chamber.



<A drawing graphing the operation control mode about the opening/closing valve of each gas lines connector module>

### List of related patents

No.	Title of Invention	Patent No./ Application No
1	Area-selective atomic layer deposition apparatus	US 15/574,277