

Electron Microscope with Moving Chamber

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Application
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⇒ Electron microscope with vacuum chamber of moveable structure.

Client / Market

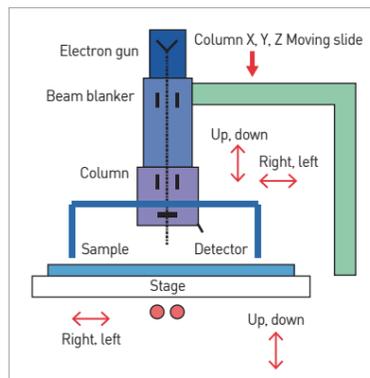
- Nano industry

Necessity of this Technology

- Amid its high resolution, electron microscope requires the specimen to be placed in the vacuum chamber to acquire images of the specimen. Therefore, if the size of the specimen is large, the specimen has to go through pre-treatment such as cutting that specimen.
- The larger the chamber, the more time for forming vacuum.
- Currently, most electron microscope uses the method of placing the specimen in the chamber, which limits the specimen size.
- The only way to see a large sample is to have a large chamber.
- The production cost (chamber, vacuum pump) increases greatly as the size of vacuum chamber increases.
- Depending on the environment, the optical design needs to redesign for a large chamber.

Technical Differentiation

- With the moving chamber, the original object can be directly observed without preparing sample specimen.
- Possible to observe a large specimen.
- Advantageous in the aspects of vacuum forming speed
- How to test: Insert the air blanker inside the vacuum chamber unit./Put air in the space between the air blanker and the specimen or stage and then move the electron microscope./Vacuum the space between the air blanker and the specimen or the stage and move the beam blanker backwards./Observe the specimen.
- When the chamber moves, the air breaker is closed. The bottom chamber is filled with air entering through the exhaust. The atmospheric pressure in the bottom chamber makes the chamber movement smooth (up, down, left, right)
- When observing the sample, the chamber come down, the exhaust is closed, and air breaker and the bottom vacuum line open to form vacuum.



DESIRED PARTNERSHIP

Technology Transfer

Licensing

Joint Research

Other

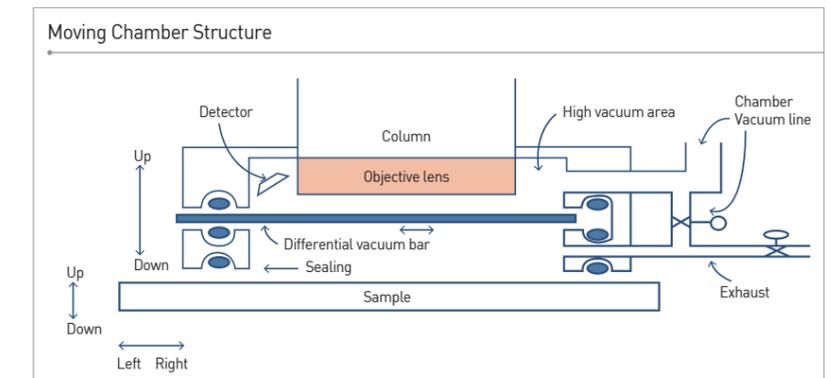


TECHNOLOGY READINESS LEVEL [TRL]

Research, basic explanation | Project concept or idea development | Technology idea verification | Prototype development | Trial product production/ evaluation in similar environment | Pilot field demonstration | Development and optimization of commercial model | Commercial product demonstration | Mass production and initial market launch

Excellence of Technology

- The column can move up, down, left, and right along the slide.
- The stage can also move along the x, y, and z-axis.
- Moving chamber is composed of two small chambers.
- The upper chamber (near object lens) is separated from the lower chamber (near sample) by the air breaker.
- The air breaker is always closed to allow the upper chamber to maintain a high-degree vacuum and is only opened for specimen observation.



Current Intellectual Property Right Status

PATENT

- Electron Microscope with Detachable Vacuum Chamber Unit and Testing Method (KR1395258)
- Electron Microscope with Detachable Vacuum Chamber Unit (KR1421090)
- Deflection Coil of Electron Microscope (KR1421094)
- Electron Microscope with Mobile Vacuum Chamber and Specimen Testing Method (KR1395261)