

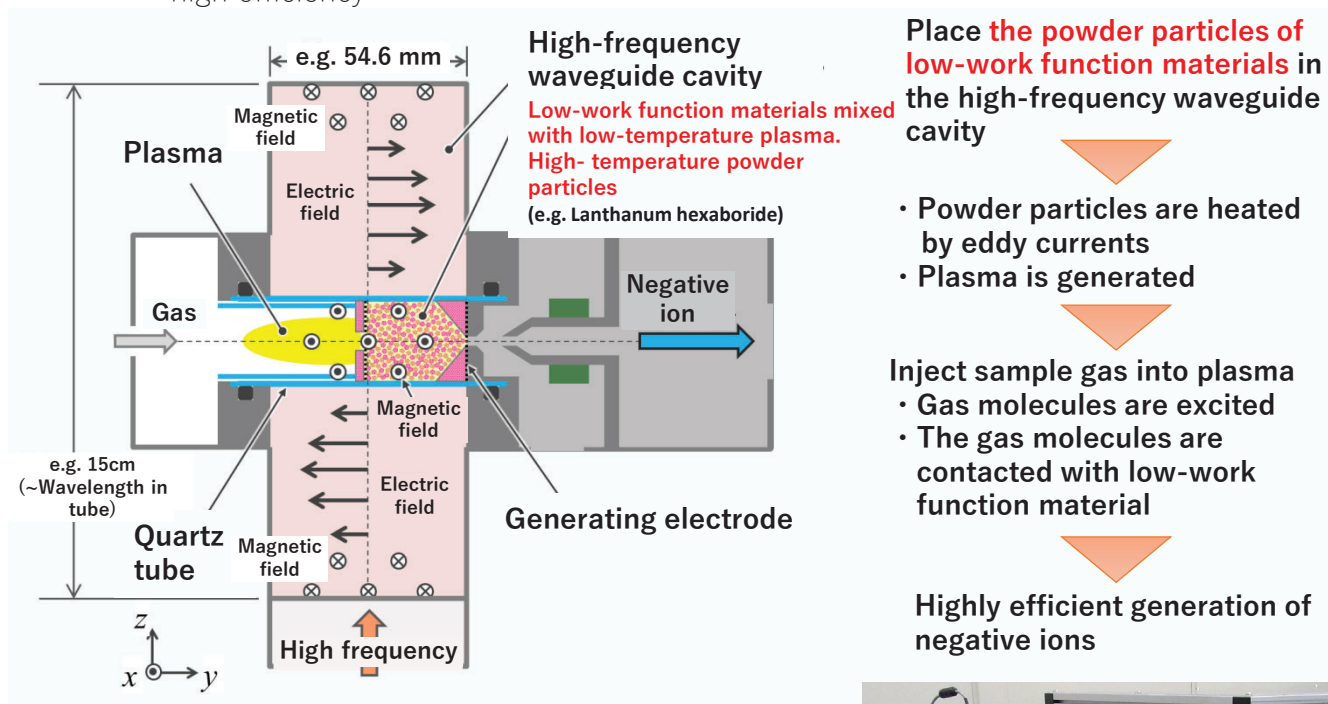


A cesium-free, compact, highly efficient, and extremely safe negative ion source

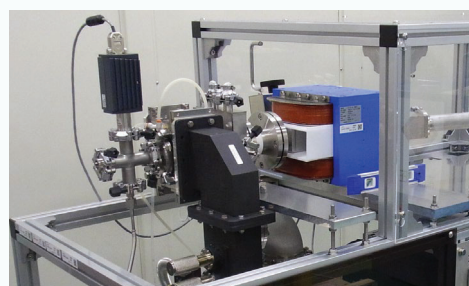
## Development of a negative ion generator by high-frequency heating of powder particles

- Cesium-free and high negative ion generation efficiency
- Safe because cesium is not used for electron donors
- The negative ion generation area is increased more than 10 times compared to the conventional method.

**Keywords :** Negative ion source, radio frequency heating, low-work function materials, cesium-free, high efficiency

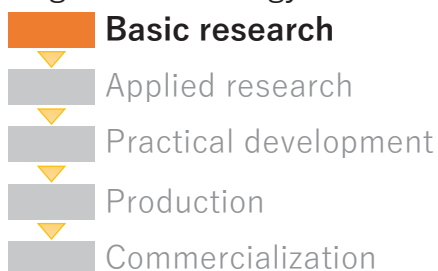


	Conventional technology	Proposed technology
Issue	Sample gas molecules collide with plasma electrons + Contact with cesium on the wall	Sample gas molecules in contact with hot powder particles of low-work function materials
Problems	<ul style="list-style-type: none"><li>• Cesium Utilization</li><li>• Small reaction area</li></ul>	Advantages <ul style="list-style-type: none"><li>• Cesium-free</li><li>• Larger reaction area</li></ul>



Proof-of-principle test equipment

### Stage of Technology



### Fields of use

- Ion beam analysis and accelerator mass spectrometry
- PET and other medical radiation fields
- Semiconductor integrated circuit fabrication processes

### Information of intellectual property

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Technical details



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