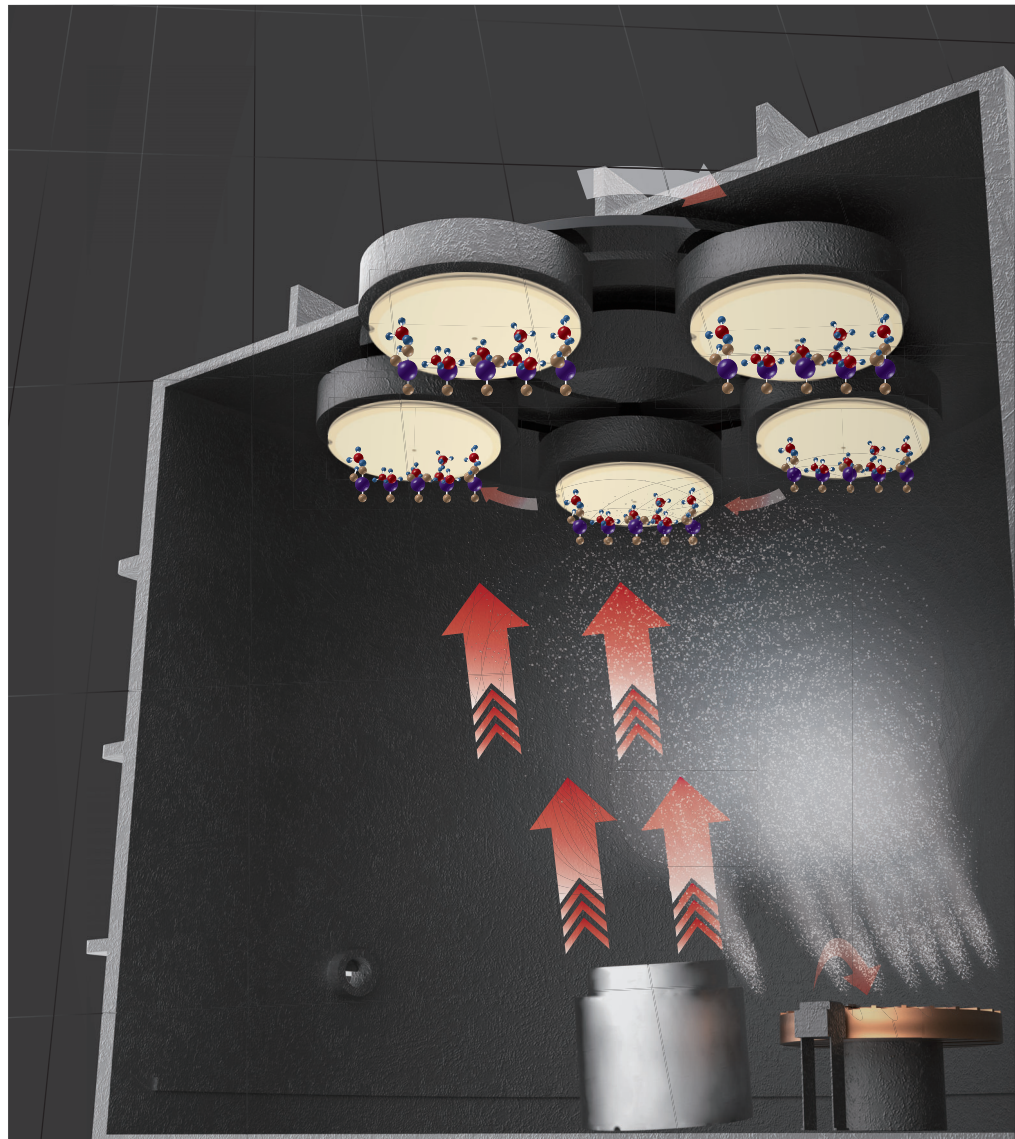


EP-ZERON™

EP-ZERON™ coating is a PVD (Physical Vapor Deposition) coating technology and, P-ZERON Sputtering method and EP-ZERON is an **E-Beam evaporation coating technology that is advantageous for forming an ultra-high-density coating film.** In the E-Beam evaporation technology, the pellet (Y_2O_3) is vaporized using the electron beam, and the vaporized molecules are accelerated with the ion beam to form a coating layer. In the case of sputtering PVD, plasma is formed with Ar gas and ionized Ar atoms collide with the target (Yttrium) to release atoms (Y) and react with the internal reactive gas (O_2) gas to form a coating layer.

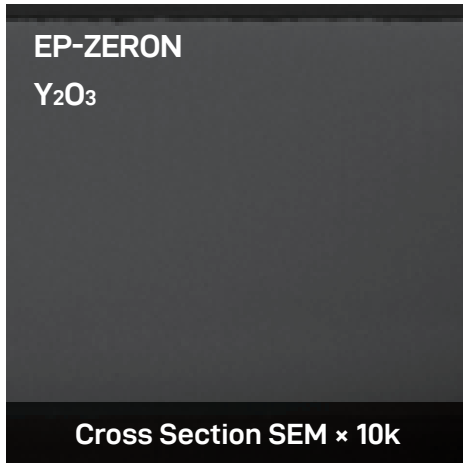


WE MAKE GLOBAL STANDARD

CINOS

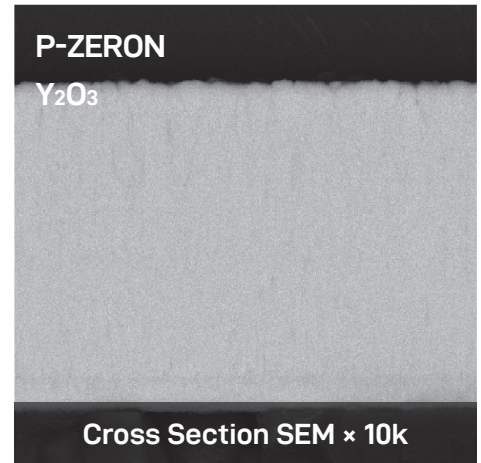
Property

CINOS PVD coating secures various grains, so it is possible to provide a coating suitable for chamber characteristics.

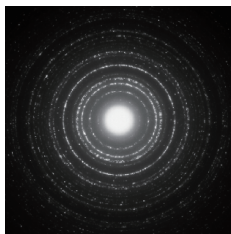


Zero ◀ Porosity (%) ▶ Zero
1297 ◀ Hardness(Hv) ▶ 1091
0.02 ◀ Roughness(μm) ▶ 0.05
10±2 ◀ Thickness(μm) ▶ 15±2

(E)P-ZERON™ has a high density showing zero porosity at SEM x10K and a hardness higher than 1000Hv.



Poly Crystal



✓ Hardness

✓ Chemical Resistance

✓ Chemical Resistance

✓ Hardness

Single Crystal



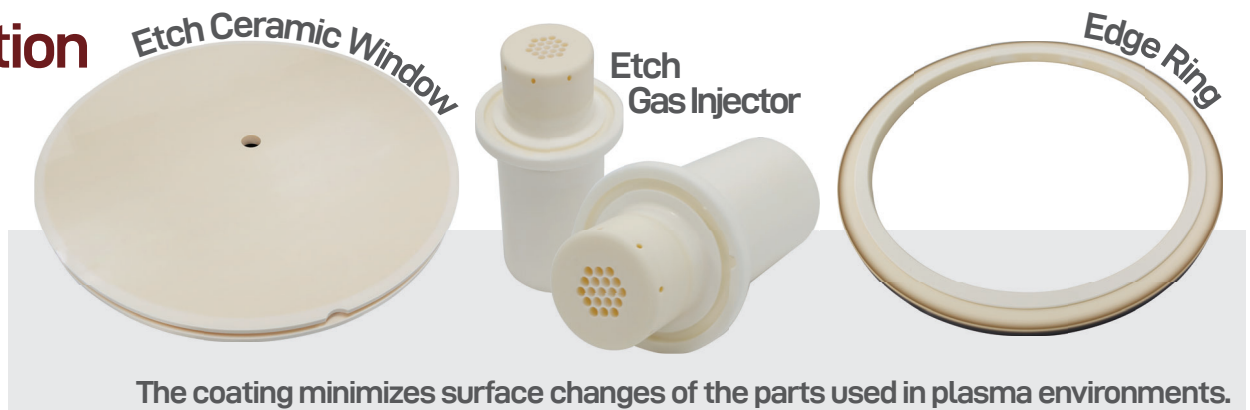
	10nm	50nm	100nm	200nm
P-ZERON™	×	×	×	○
EP-ZERON™	×	○	○	×

Benefit

CINOS PVD coating has superior physical properties to APS, SPS, and AD coating and has the smallest change in a plasma environment, so it can be applied to the ceramic window on the upper part of the etch chamber.

	APS(1Gen)	SPS(2Gen)	AD(3Gen)	PVD
Roughness	■	▲	▲	●
Hardness	■	▲	▲	●
Adhesion	■	▲	●	●
Porosity	■	▲	●	●
		Normal	Good	Excellent

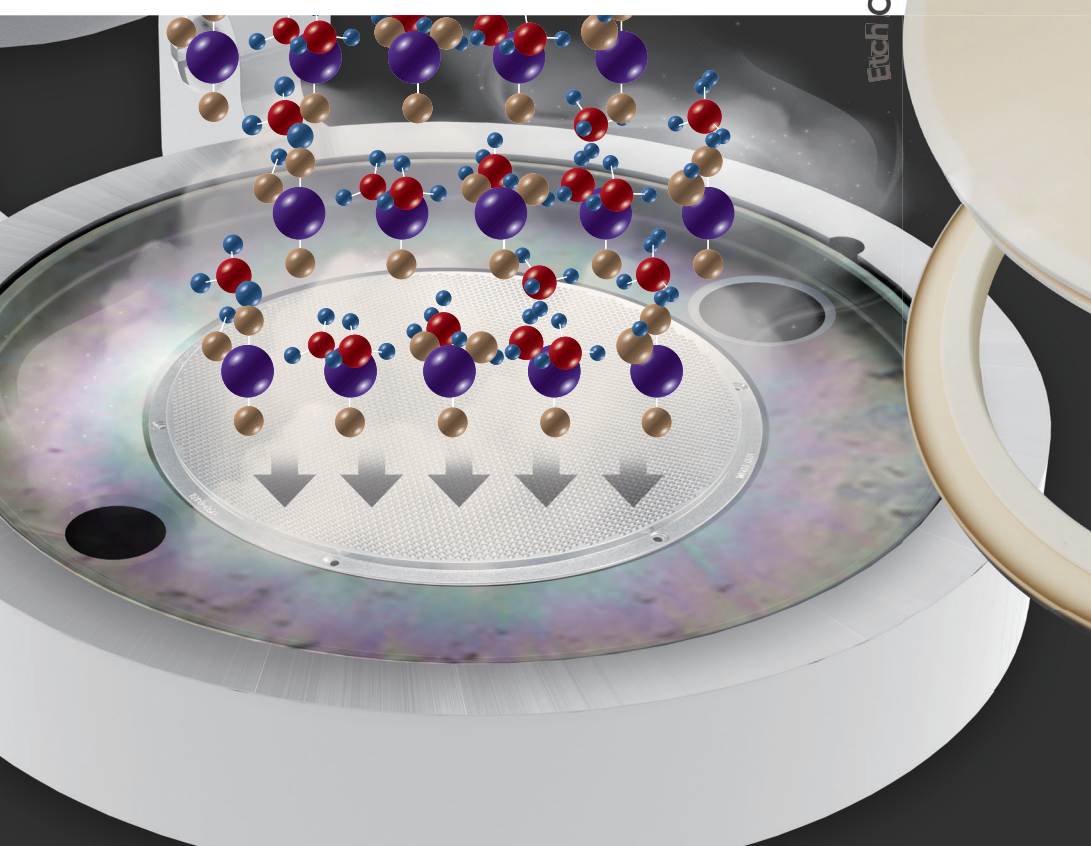
Application

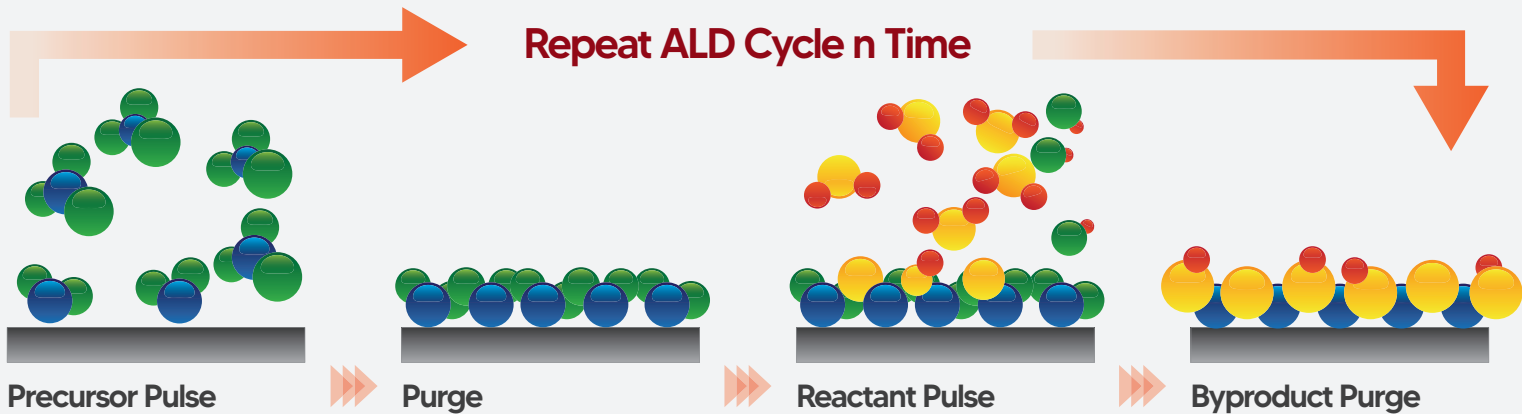


CINOS COATING TECHNOLOGY

A-ZERON™

A-ZERON™ Coating is an ALD (Atomic Layer Deposition) that forms a coating by stacking atoms. It is a technology that forms a coating by repeatedly injecting and evacuating precursors and reactants. A-ZERON™ coating has higher coating density and adhesion and lower process temperature compared to other thin coating processes such as PVD and CVD.



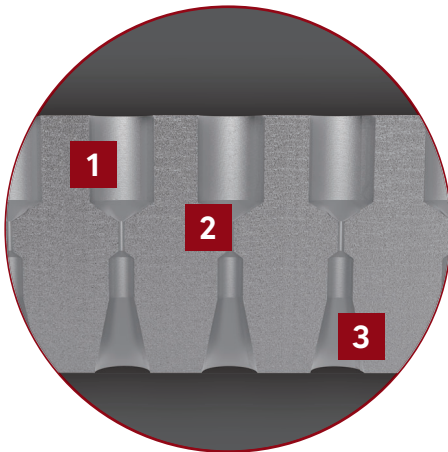


Al₂O₃ Coating

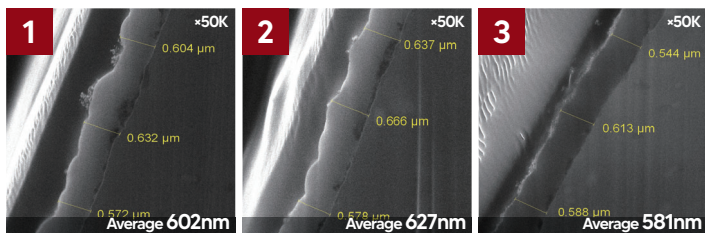
A-ZERON™ Al₂O₃ coating is formed with TMA* (Al(CH₃)₃) as the precursor and H₂O as the reactant. A-ZERON Al₂O₃ coating is formed as a uniform coating layer inside and on the entire surface of the showerhead hole of the CVD process, increasing the surface hardness and reducing the reactivity with the gas used in the CVD process to extend the lifetime and reuse cycle of parts.

* TMA : Tri Methyl Aluminium

Mechanism



ALD Coating Showerhead Hole Step Coverage



Y₂O₃ Coating

A-ZERON™ Y₂O₃ coating can be coated at 100nm level and has a grain size of 600nm or more, so chemical resistance and plasma resistance are strong.

