

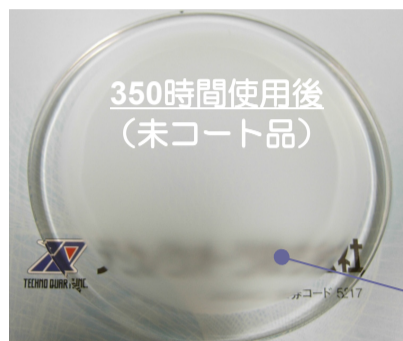
耐プラズマ表面処理／CVDイットリアコート製品

“High-Purity CVD Yttria(Y₂O₃) Coated Parts”

CVDイットリアは耐プラズマ性に優れた高純度保護膜です。
CVD Yttria is high-purity film which exhibits excellent resistance to F-based plasma.



Yttria coated window after 700 hours of use



Quartz window after 350 hours of use

■実装評価 Implementation Evaluation

用途 Application : View Port
 プロセス Process : SiO₂ Etching
 ガス Gas : CF₄+O₂
 初期膜厚 Initial thickness of Yttria film : 400nm

NOTE: Used view port without Yttria film is clouded by suffering damage from F gas.

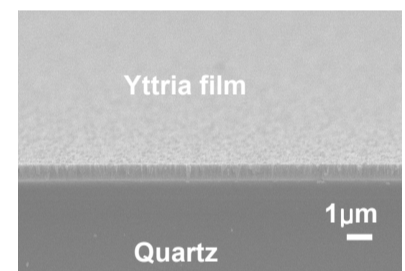
■製品特長

Product Features

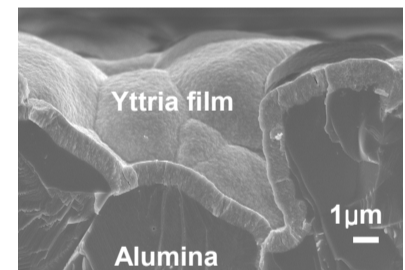
- ▶ 耐プラズマ性に優れたイットリア膜で基材表面をカバー
 CVD Yttria has excellent resistance property to plasma and causes the longer life of chamber parts.
- ▶ CVD法で密着性が高い緻密イットリア膜を形成
 CVD method enables to cover substrates with high adherent and dense Yttria film.
- ▶ イットリア膜中の不純物含有量 : Na, Cu, Fe, Al < 0.2 wt ppm
 CVD Yttria is high-purity material with low-impurity concentration.
- ▶ 300mm/パーツ対応
 Applicable to chamber parts for 12" wafer process.

■断面SEM写真

SEM Pictures of Cross-section



石英ガラスへのイットリアコート
 Yttria film/Quartz(Polished surface)



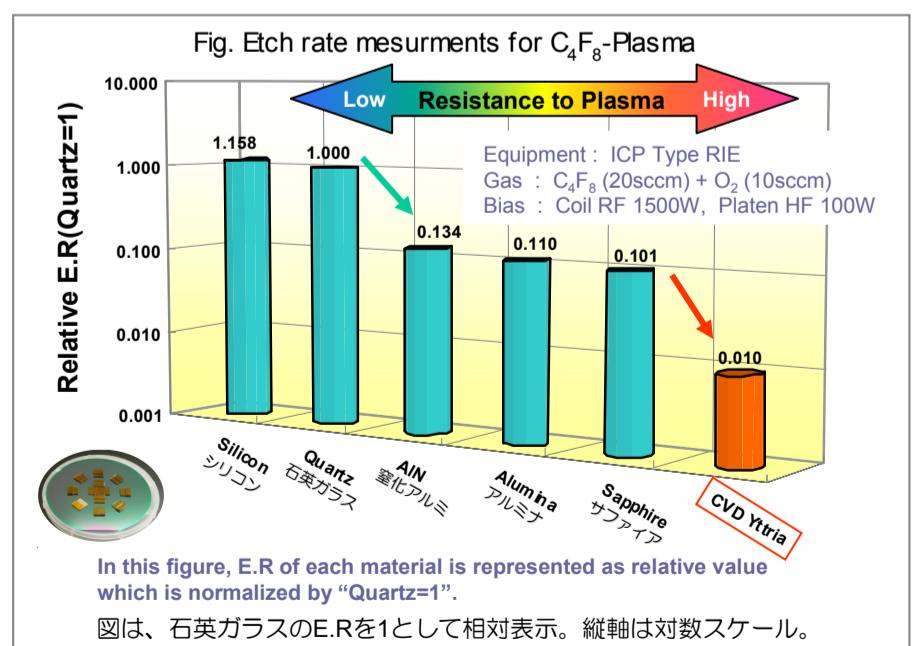
セラミックスへのイットリアコート
 Yttria film/Alumina

■耐プラズマ性

Resistance Property To Plasma

CVDイットリアはF系プラズマ耐性に優れた保護膜です。
 エッチング条件にもよりますが、CF系プラズマに対するCVDイットリア膜のE.Rは、石英ガラスの約1/100です。
 SF₆に対しては更に耐性あります。

CVD Yttria provides high resistance to F-based plasma.
 When compared with Quartz, the Etch Rate of CVD Yttria to CF plasma is 1/100. Even higher resistance property is expected to SF₆ plasma.

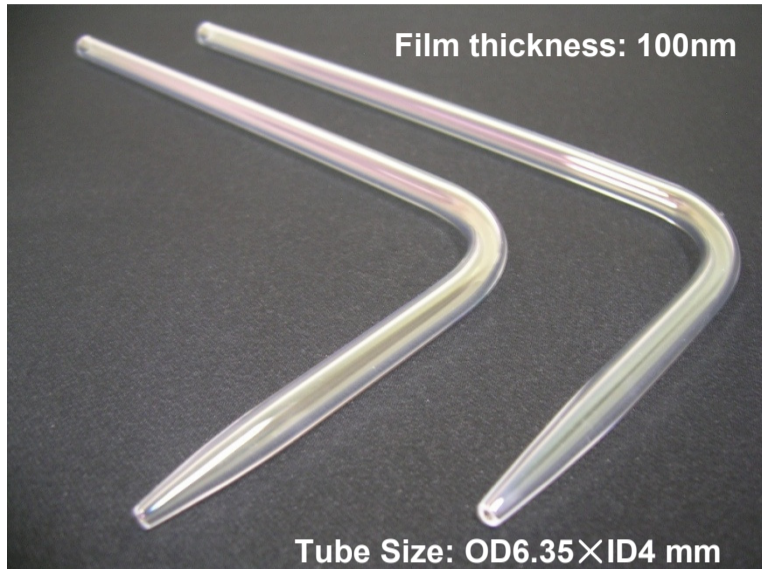


■コーティング事例

..... Coating Application

湾曲した石英ガラス管の内壁にコーティングした事例

Coating sample to inner wall of curved tubes.



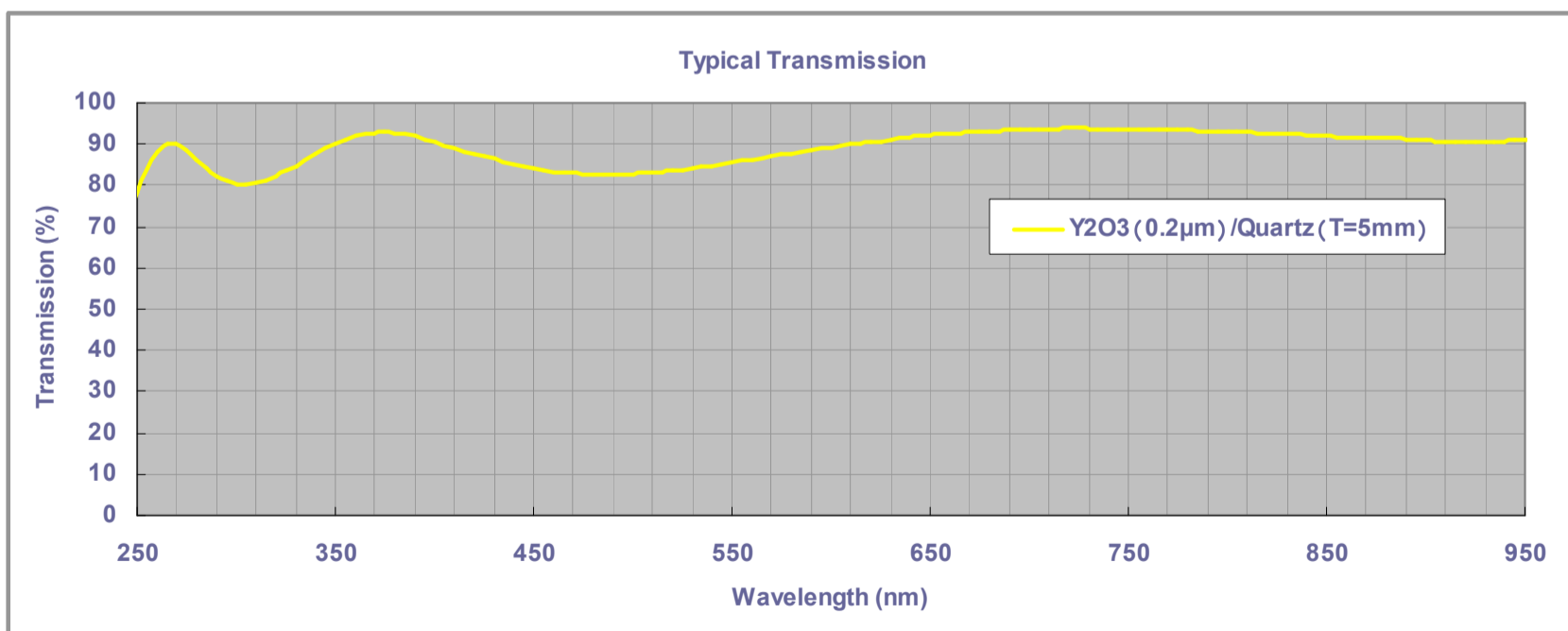
- ▶ 配管内面を腐食(侵食)から守る
Protecting inner wall of tubes from corrosion
- ▶ 優れた耐ハロゲン性
Excellent resistance to halogen gas
- ▶ コンタミ防止
Prevention of contamination
- ▶ CVD膜特有の高い密着性
High adhesion specific to CVD film

CVD method enables to cover inner wall of a quartz tube with high adherent and dense Yttria film.

■典型特性

..... Typical Property of CVD Yttria film

		Yttria film	Yttria(Bulk)	Alumina(Bulk)	Fused Quartz
Density	g/cm ³	5.0	4.9	3.9	2.2
Thermal Expansion Coeff. (40-400°C)	10 ⁻⁶ /°C	5-6	7.2	7.2	0.55 (20-320°C)
Dielectric Constant at 1MHz		11	11	9.9	3.75
Dielectric Strength	kV/mm	>24	11	15	50
Electrical Resistivity at RT	Ω·cm	1.6×10 ¹²	>10 ¹³	>10 ¹⁴	>10 ¹⁸



注記) 上記物性値は典型値であり、保証値ではありません。

NOTE: Properties are typical and should not be considered as specifications.