



scia Cube 300

LARGE AREA COATING AND ETCHING

Features & Benefits

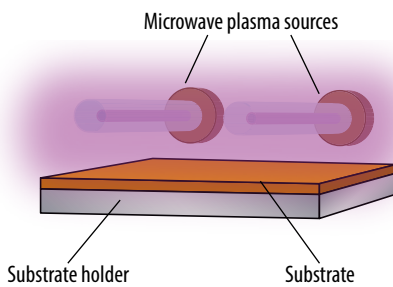
- Large area processing with an array of synchronized linear microwave sources
- Independent RF bias at substrate holder for energetic substrate bombardment
- Substrate cooling (-10 °C) or heating (850 °C)
- In-situ chamber cleaning process

Applications

- PECVD Processes
 - Deposition of dielectric films (e.g. encapsulation, barrier coatings, electric insulation (SiO₂, Si₃N₄, ...))
 - Optical and scratch resistant coatings (a-C:H, DLC)
 - Growing of nano-crystalline diamond and carbon nanotubes
- RIE Processes
 - Reactive etching and structuring of metals (Ni, Cr, Pt, ...)
 - Etching of gratings and other structures in optical materials (quartz, fused silica)
 - Ashing of photoresist

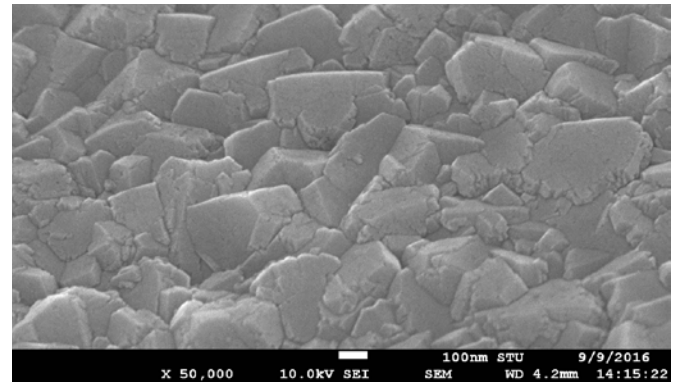
Principle

- Plasma Enhanced Chemical Vapor Deposition (PECVD) and Reactive Ion Etching (RIE)
 - Plasma of reactive gases is created by microwave sources
 - Enhanced ion bombardment with RF bias



Application Example

- Growth of boron doped diamond (BDD)
 - Processing with very low temperature (390 °C)
 - Growth rate of high quality BDD up to 70 nm/h



SEM image of synthesized BDD layers with courtesy of STU Bratislava

Technical Data

Substrate size (up to)	300 mm x 200 mm
Substrate holder	Water cooled, RF bias
Substrate temperature	Alternatively cryo cooling down to -10 °C or heating up to 850 °C
Plasma source	2 linear microwave sources (PL400) and/or RF parallel plate arrangement, 13.56 MHz
Typical deposition rates	Diamond: 30 ... 70 nm/h, DLC: 7.5 nm/min
Power supply	MW-power: max. 9 kW, RF-power: max. 0.6 kW
Base pressure	< 1 x 10 ⁻⁶ mbar
System dimension (W x D x H)	1.30 m x 1.90 m x 1.50 m (without electrical rack and pumps)
Configurations	Single chamber, optional automatic vacuum load-lock system
Software interfaces	SECS II / GEM, OPC

