



MODEL AX5010 CVD DIAMOND REACTOR

- ◆ Low cost diamond reactor — for universities and R&D laboratories
- ◆ Field-proven design — with extensive library of published papers
- ◆ Applications include: homoepitaxy, doping studies, and selective growth
- ◆ Precision ASTeX power generator — for reproducible results
- ◆ Simple construction — reliable, easy to use and maintain
- ◆ Gas handling and vacuum kits — for complete CVD diamond configuration

Seki Technotron

THE SEKI ADVANTAGE

The Model 5010 diamond deposition source is used for the growth of high quality diamond films. Intended as a very low cost system for basic film research in R&D laboratories, the system nevertheless produces true polycrystalline diamond films on a variety of substrates with properties equal to or better than those made by any other method. The AX5010 is easy to use, small in size, and gives reproducible results.

The AX5010 reactor comes complete with a 1 kW microwave power generator, waveguide components, quartz bell jar, and microwave cavity with pumping ports, substrate holder, support stand, and air cooling blower.

Materials:	Quartz bell jar, removable stainless steel substrate holder
Bell Jar Size:	4 in. inside diameter, 8 in. high; accepts substrate up to 3 in. diameter
Microwave Shield:	5 in. inside diameter, 6 in. outside diameter
Cooling:	Forced air blower provided
Reactor Weight:	30 lb
Microwave Supply:	Model AX2110 precision microwave power generator with 1 kW of precisely regulated (to 0.1%) 2.45 GHz microwave power with less than 1% ripple. Input power is 208 VAC or 240 VAC, single phase, 50/60 Hz, 20 A (1.5 kW option available).
Microwave Coupler:	Rectangular-to-circular symmetric waveguide mode converter for symmetric plasma production, tunable for plasma impedance matching.

REACTOR OPTIONS

Simple, add-on, purpose-specific component kits to enable AX5010 reactor users to produce high quality diamond:

KIT1 – GHK:	Gas Handling and Pressure Control Kit
KIT2 – PBK:	Plumbing Kit
KIT4 – PPK:	Pumping Kit
KIT4a – PPKC:	Corrosion-Resistant Pumping Kit

SELECTED BIBLIOGRAPHY

- M.W. Geis, D.D. Rathman, J.J. Zayhowski, D. Smythe, D.K. Smith, G.A. Ditmer, "**Homoepitaxial Semiconducting Diamond**," in *Diamond and Diamond-like Materials Synthesis*, edited by G.H. Johnson, A.R. Badzian, M.W. Geis, 1988.
- D.-R. Wur, J.L. Davidson, W.P. Kang, D. Kinser, "**Fabrication and Characterization of Doped Polycrystalline Diamond Film (PDF) for Strain Sensing Applications**," *Proceedings of the 7th International Conference on Solid State Physics and Actuators*, 1993.
- R. Ramesham, "**Selective Growth of Polycrystalline Diamond Thin Films**," *Mat. Res. Soc. Symp. Proc.*, **282**, 1993.
- J.L. Davidson, R. Ramesham, and C. Ellis, "**Synthetic Diamond Micromechanical Membranes, Cantilever Beams, and Bridges**," preprint.
- R. Ramesham and B.H. Loo, "**Air-Microwave Plasma Etching of Polycrystalline Diamond Thin Films**," *J. Electrochem. Soc.* **139**, (7), 1992.