

EasyTube™ 4000

Standard Configurations

- Windows™ Based Computer Controlled Operations, Data Logging, Safety Interface and Recipe Generation
- Preprogrammed Application Specific Recipes for Vertically Aligned CNT, Nanowire and Thin Film Deposition
- Cold Wall Reactor with Cylindrical Three Zone Infrared Heating System for Process Temperatures > 900 °C
- Temperature Uniformity: +/- 3 °C
- DC Plasma: 2.5KW 1000/500 Volt or RF Plasma: 1KW@ 13.56 MHz
- Base Pressure <10 mtorr
Operation Pressure: 100 mtorr to 500 torr
- Cantilevered Automatic Loading System to Eliminate Particulate
- Wafer Size: 4" and Smaller
- Four (4) Mass Flow Controlled UHP Gas Lines
- Shower Head Gas Injector
- Easy Chamber Cleaning with Oxygen Plasma
- Viewport for In Situ monitoring
- Comprehensive Software and Hardware Safety Interlocks
- CE and Semi-S2/S8 Certified
- One (1) Year Warranty

First Nano's **EasyTube™ 4000** System is an advanced Plasma Enhanced Chemical Vapor Deposition process tool for the synthesis of nanomaterials at low temperature and various thin film materials deposition. The system is developed to address materials research challenges for the nanomaterials research and semiconductor industries. EasyTube is now being used for materials research across many industries including, Semiconductor, Nanotechnology, Solar Cell, MEMS etc. The tool delivers precise control over process development with user safety in mind.

EasyTube™ 4000 is easy to use with a PC controlled recipe driven software that automatically acquires and logs data for verifiable repeatability.

EasyTube™ 4000 can be used as a cold wall thermal CVD system for nanomaterials synthesis. It's the solution for control over nanotube / nanowire synthesis and thin film deposition using a single precision tool with total system flexibility.



EasyTube™ 4000's modular platform houses several key process components and multiple advanced options to meet your specific process requirements. Options are field upgradeable.

EasyTube™ 4000 with Loadlock minimizes contamination in process chamber to improve deposited materials quality and purity. The loadlock also reduces overall process time and increases sample productivity by permitting less pumping time in the process chamber.

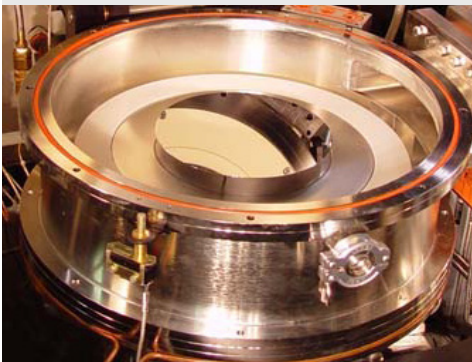
EasyTube™ 4000

Modular Options

- Loadlock for High Throughput
- Ultra High Vacuum with Base Pressure 10^{-6} torr
- Liquid Precursor Vapor Deliver Kit
- Wafer Size to 6"
- Interface for In Situ Measurement
- Wafer Rotation
- Additional Mass Flow Controlled UHP Gas Lines (up to 12)
- EasyGas™ Hazardous Gas Cabinets, EasyPanel™ UHP Gas Panels, EasyExhaust™ Gas Conditioning System

CNT Properties Made by DC-PE-CVD

- Growth Temperature: <math>< 600</math> °C
- Length: 1 – 30 μm
- Diameter: 20 – 200 nm
- Density: <math>< 10^9</math> / cm²
- Substrate: Si, Glass, Cu, etc.



Deposition Chamber

EasyTube™ 4000 is capable of synthesizing a myriad of materials including:

- Nanomaterials: Vertically Aligned CNT's at below 600 °C
- Si nanowire
- Thin film Solar Cell: Amorphous Silicon, Polysilicon
- Dielectric film: SiO₂, Si₃N₄
- Diamond and Diamond Like Carbon thin film

EasyTube™ 4000 is designed to meet today's most stringent safety standards include CE and Semi-S2/S8. Some standard safety features include automatic inert purge, redundant interlocks for all critical alarm conditions, integrated gas leak detection, exhaust gas dilution and more. Alarms are displayed on the monitor, audibly announced, data logged and can be remotely transmitted. The EasyTube™ 4000 ensures semiconductor industry level safety under all growth conditions.

Call us at (631) 981-7081 to discuss a product solution for your project. We can also be reached at sales@firstnano.com or visit our website at <http://www.firstnano.com>

FACILITIES REQUIREMENTS

Electrical	208 V.A.C	3 Phase	
Dimension	96" L	32" W	70" H
Exhaust		300 CFM	
Cooling Water	2 GPM	50-75 PSIG	
Pneumatic Supply	Clean Air or N2	80 PSIG	
Facility Nitrogen		20 PSIG	
Process Gases		Customer specified	

* Note: Electrical varies with country; facilities requirements vary with system options. Consult Factory for details.