

EasyTube™ 2000



Standard Configurations

- Windows™ Based Computer Controlled Operations, Data Logging, Safety Interface and Recipe Generation
- Preprogrammed Recipes for SWNT, MWNT, Aligned CNT and Nanowire
- Resistance Furnace for Temperatures > 1100 °C
- High Throughput with FastCool™ Furnace
- Proprietary Real-Time Cascade Process Temperature Control
- Cantilevered Automatic Loading System
- 3" Quartz Reaction Chamber
- Four (4) Mass Flow Controlled UHP Gas Lines
- Comprehensive Software and Hardware Safety Interlocks
- 1 Year Warranty
- Semi - S2/S8 and CE Certified

First Nano's **EasyTube™ 2000** System is an advanced turnkey thermal catalytic chemical vapor deposition process tool for the synthesis of a variety of nanostructured materials. The system is optimized for controlled process development and user safety.

EasyTube™ 2000 is easy to use with PC controlled recipe driven software that automatically acquires and logs data for verifiable repeatability.

The graphical user interface (GUI) allows users to logically access preprogrammed recipes, modify and/or create recipes and view real time execution data.

EasyTube™ 2000 modular platform houses several key process components and multiple advanced options to meet your specific process requirements. Options are field upgradable.



Hot Loader and FastCool™ Furnace



EasyTube™ 2000 is designed to meet today's more stringent safety standards. Some of the standard safety features include low cabinet exhaust, low cooling water, high temperature, end cap seal failure, exhaust line purge, flammable gas leak detection and more. Alarms are displayed on the monitor, audibly announced, data logged and can be remotely transmitted.

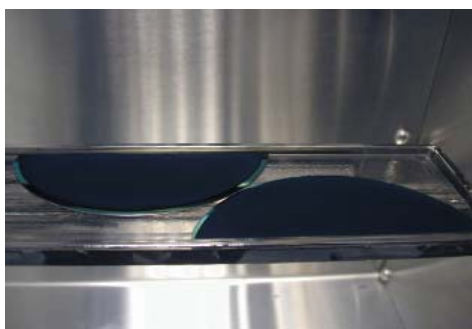
The EasyTube™ 2000 offers the FastCool™ furnace for high throughput. The resistance furnace automatically opens at multiple steps during the cooling stage to reduce the cooling time from more than 3 hours to less than 1 hour. With this standard feature, typical CNT growth recipe can be finished within 2 hours.

Modular Options

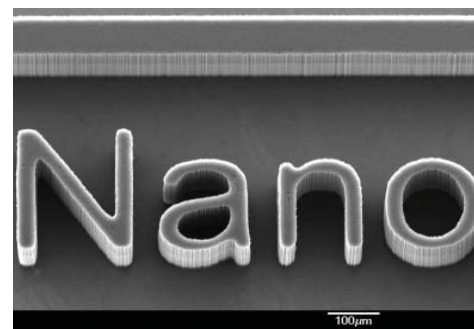
- Multi-zone Furnace with Proprietary Real-Time Cascade Process Temperature Control
- Resistance Heating High Temperature Furnace to > 1250 °C
- Infrared (IR) Heating for Rapid Thermal Processing (RTP) > 1150 °C
- Low Pressure Operation (100 mtorr – 700 torr), < 50 mtorr Base Pressure
- Solid Source Vapor Delivery Kit for Oxide or Nitride Nanowire
- Liquid Precursor Vapor Delivery Kit
- Bubbler Liquid Auto Refill
- Rectangular Process Tube for Improved Laminar Gas Flow
- DC Bias Field Assisted Growth
- Hot Loader to Load Sample into a Pre-Heated Chamber
- Residual Gas Analyzer (RGA)
- Additional Mass Flow Controlled UHP Gas Lines up to 8 Lines
- Air to Water Heat Exchanger for Cooling Water
- EasyGas™ Hazardous Gas Cabinets, EasyPanel™ UHP Gas Panels, EasyExhaust™ Gas Conditioning System



Hot Loader



CNT film on a 3" wafer cut in half



Vertically aligned CNT array

enabling tomorrow's technologies™

EasyTube™ 2000

EasyTube™ 2000 is "synthesis made easy" for many different nanostructures including single wall CNT, multi-wall CNT and nanowires by using combinations of hydride gases and liquid/solid source precursors. Automated sample loading ensures consistent leak tight sealing of the process tube and placement of the substrate for process repeatability.

Our field proven system performance and solid customer base establishes First Nano as the clear choice in leading edge nanotechnology development equipment for the advanced research facility.

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>

FACILITY REQUIREMENTS

Electrical	208 V.A.C	3 Phase	30 AMP
Dimension	64" L	30" W	60" H
			900 to 1300 LBS
Exhaust	300 CFM		
Cooling Water	1 GPM	50 PSIG	
Pneumatic Supply	Clean Air or N2	80 PSIG	
Facility Nitrogen	25 SLPM	10 PSIG	
Process Gases	Ar, H2, CH4, C2H4 or Customer specified		

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

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