



1 Torr = 1 mm Hg

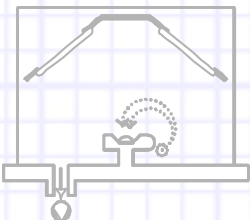
# CRC-600 Sputtering System



CRC-600 WITH BOTH DC & RF POWER SUPPLIES,  
AUTOMATIC MATCHING NETWORK, AND SUBSTRATE ROTATION

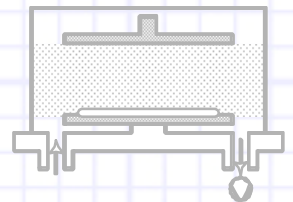
## Compact Research Coater Table-Top and Affordable

Torr International, Inc.'s Compact Research Coater model number CRC-600 Sputtering System is a manual planar magnetron sputtering system designed specifically for the nanotechnology research environment. This fast and affordable high rate sputtering system provides excellent film quality in a surprisingly small footprint. The CRC-600 can be used to develop the deposition process for a wide variety of materials including aluminum, carbon, chromium, gold, Teflon®, silicon dioxide, tantalum, tungsten and titanium. Since the two inch targets can be changed quickly, the CRC-600 is easily reconfigured for applications requiring a different series of deposited materials. The 150mm substrate platform and 300mm vacuum chamber accommodates wafers up to 6 inches in diameter, as well as irregular shaped substrates. All Torr Systems are clean room compatible.



<http://www.torr.com> • (845) 565-4027 • (888) MAC-TORR

**TORR INTERNATIONAL, INC.**  
Thin Film & Nanotechnology



# CRC-600 Sputtering System

The CRC-600 Compact Research Coater uses a DC and RF compatible water cooled planar magnetron source. Many available options provide an expanded variety of process capabilities, including a water cooled stage to protect extremely heat sensitive samples such as polycarbonate membranes. The optional stage heaters can rapidly and uniformly heat a substrate to a maximum of 600° C during deposition for improved film adhesion. The CRC-600 can also be manufactured with a DC etch mode for a gentle, low power plasma glow discharge pre-cleaning, and an RF etch option can be used for more serious etch applications for removal of bonded surface material prior to coating.

## • Excellent Film Quality

High rate planar magnetron sputtering produces uniform, adherent thin films while new source shutters protect the sample surface from target oxide contamination during a deposition pre-sputter run.

## • Highly Versatile, Space-Saving and Affordable

A wide variety of materials can be deposited, including: aluminum, carbon, chromium, gold, Teflon®, Silicon Dioxide, tantalum, tungsten and titanium. And since it is completely manually controlled, the compact tabletop system is economical.

## • Process Efficiency

It takes less than thirty seconds to change a solid disc target, so the CRC-300 is easily reconfigured for applications requiring a different series of deposited materials. A sixty liter/second turbomolecular vacuum pump allows a 10<sup>-7</sup> Torr range base pressure.

## • Low Maintenance

The turbomolecular pump needs zero maintenance while the external roughing pump just requires routine oil changes. Chamber cleaning is the only programmed maintenance.

## • Many Options Available

Choose from stage heating, stage rotation, RF etching, film thickness monitoring, water cooled stage, chamber size, and other options to customize the CRC-300 for your application. All systems are custom built to your specifications.

## Sputter Rates

Current = 90 mA Distance: source target to sample = 2"

Materials	Angstroms/Minute	Approximate Plasma Voltage
Silver (Ag)	1100	400-450
Gold (Au)	1650	700-750
Palladium (Pd)	688	400-450
Copper (Cu)	529	425-475
Aluminum (Al)	484	425-500
Platinum (Pt)	476	400-450
Nickel (Ni)	400	450-550
Chromium (Cr)	400	450-550
Tantalum (Ta)	362	550-650
Titanium (Ti)	362	550-650
Tungsten (W)	317	550-650
Carbon (C)	75	700-800

Note: All data is based on calculations using the specified power outputs and distance from the sample pedestal and the target. These figures are intended to be a basic guideline and the numbers can be easily decreased or increased by changing the system parameters.

## Film Thickness Distribution

Substrate Diameter	Uniformity with Rotation and Tilt	Uniformity without rotation
1 inch	<±0.5%	±2%
2 inch	<±1%	±3%
3 inch	±2%	±8%

Argon pressure = 2mTorr Distance: source target to sample = 3.5"

## CRC-300 SPUTTERING SYSTEM - STANDARD SPECIFICATIONS

PROCESS CHAMBER: SS chamber 12" x 12" x 14" with 4" View Port

SAMPLE TABLE: 6" diameter adjustable to 7" height

SPUTTERING SOURCE: Single 2" planar magnetron gun, water cooled and shuttered

PROCESS GAS: Typically high purity Argon regulated to 2-5 psi

VACUUM PUMPS: 80 l/sec turbomolecular pump, ~40 l/min 2 stage rotary pump

DC POWER SUPPLY: 600 watts max DC, 200 mA, 1000 volts

NOMINAL INPUT POWER: 115/230 volt, 50/60 Hz, 5 amps

FOOTPRINT: Approximately 32" wide x 24" deep x 36" high

WEIGHT: Approximately 250 lbs. (113 kg.)

WARRANTY: One Year Parts and Labor, extended warranties available

EC CERTIFIED: EMI Certified by European Community

## AVAILABLE OPTIONS

PROCESS CHAMBER: Safety Pyrex Glass 10" diameter with Implosion Guard.

RF POWER SUPPLY: Choose a 600W RF power supply 13.56MHz with manual or automatic matching network.

FILM THICKNESS MONITOR: Quartz crystal, .1 nm resolution, eight material memory, and auto termination of sputtering at preset thickness.

SUBSTRATE ROTATION: 0-20 RPM rotation.

TILTED MAGNETRON GUN: 19 degree tilt of Magnetron Source

WATER COOLED STAGE: Direct water cooled, adjustable height, 6" diameter assembly.

LN<sub>2</sub> COOLED STAGE: Fixed height stage assembly with gravity fed, external, integral LN<sub>2</sub> Dewar.

STAGE HEATING: 100° - 600° C, Variable temperature with quartz lamps & thermocouple read out.

RF ETCH MODE: Electrically isolated stage assembly for DC and/or RF Etch with UHF connections & external cables to optional RF power supply.

TARGETS: A wide variety of conductive and dielectric targets are available.

**For orders and any other details, contact us today.**



1 Torr = 1 mm Hg

# TORR INTERNATIONAL, INC.

<http://www.torr.com>

## Thin Film & Nanotechnology

12 Columbus Street  
New Windsor, NY 12553  
(845) 565-4027  
(888) MAC-TORR  
Fax: (845) 561-7731  
E-mail: [torr@torr.com](mailto:torr@torr.com)