Laurell WS-650M Spin Coater

Spin Coater

Tool Type: PDMS
Location: Microfluidics Lab
Description: Spin coater for applying thin coatings of PDMS and other resins
Manufacturer: Laurell

Last updated 1/4/23 Haley

About

Spin coaters facilitate the deposition of thin films by applying centrifugal force to flat substrates, such as wafers or microscope slides. Like most spin coaters, this one uses a vacuum chuck to hold the substrate while it spins. Recipes can be customized, with parameters for spin speed, acceleration rate, spin time, and multiple steps.

Safety Concerns

Pinching Hazard Be careful when closing and opening the spin coater lid.
High Velocity Debris By default, an interlock prevents the spin coater from operating while the lid is open. Nonetheless, substrates spin at a high speed and vacuum chuck failure is possible for less-than-flat samples. Always wear safety goggles when operating this tool and ensure the spinner has come to a complete stop before opening the lid.

Training Documentation

laurel_spin_coater.pdf

Detailed Specifications

From the manufacturer

This 650-series coater system will accommodate up to ø150mm wafers and 5“ × 5” (127mm × 127mm) substrates, and features a maximum rotational speed of 12,000 RPM (based on a ø100mm silicon wafer).

Process Controller: The 650-series process controller utilizes a robust microprocessor and, with the use of its accompanying PC software (written in an object-oriented programming language), it achieves nearly unheard of flexibility both in process definition and use. This controller allows operator interaction in real-time during the process execution including pausing time, stopping and continuing on from that point. The system can and will be continually updated easily and quickly in the field with downloadable firmware revisions. (We plan ahead at Laurell!)

A Brief Description: The housing for this system is typically made from a solid co-polymer blend exclusive to Laurell Technologies. Unlike pure Natural Polypropylene, this material is able to resist solvents and strong acids and bases. Samples are available for testing and verification upon request. A solid PTFE Hostaflon® TFM-1600 / Teflon® AF housing is available (popular for high temperature chemistry and sub-micron particle studies).

Laurell's unique internal bowl design eliminates splash back, making it unnecessary to install “splash rings.” Our Exhausted Drain Adapter with removable reservoir is as functional as it is convenient.

The closed bowl design, coupled with the precision of the process controller, allows most coating materials to dry in a quiescent state, increasing uniformity and minimizing particle contamination. The upper plenum closes inside the base to provide an overlapping seal, and the inside of the lid has a special gutter to channel fluid to the rear of the system to discourage chemicals from accidentally dripping onto the substrate.

A proprietary labyrinth seal protects the motor and control electronics from chemical contamination. This seal provides the process chamber with Nitrogen purge and has been proven to be particle-free on a sub-micron level during field testing. The system's lid is chemically resistant, and only ECTFE-coated 316 stainless steel screws are used in some non-wetted areas throughout the system.

Need more details? See WS-650 Coater / Universal Spin Processor.

Reference Documentation

Operation Manual Spin 3000

Installation Instructions

Operation Manual WS 650

laurel_ws-650m_programming_handout.pdf