


Spray pyrolysis is a process in which a thin film is deposited by spraying a solution on a heated surface, where the constituent reacts to form a chemical compound. The process is particularly useful for the deposition of oxides and has long been a production method for a long period for applying a transparent electrical conductor of Tin oxide (SnO_2) or Stannic oxide to a glass. Now is popular to prepare perovskite solar cell.

MSK-USP-02 is a desktop ultrasonic spray pyrolysis (USP) equipment, where parameters like dispensing rate of the solution and speed of spray head movement are precisely controlled which are difficult to be controlled in a manual process. A positive displacement pump controlled by the stepper motor and the microprocessor is used to dispense solution as per requirement. The ultrasonic spray head provides thinner particle coating and its movement is controlled by the stepper motor driven linear stages in X and Y direction to ensure uniform coating. The temperature of the substrate heater plate is controlled independently through a dedicated controller.

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| Power Input | Single phase 208 - 240VAC, 50/60Hz |
| | Please order a 1500W transformer for running the machine only in 110V |
| | Please order a 3000W transformer for running the machine and the air compressor in 110V |
| | Actuator: Stepper motor, 24VDC |



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| Dispenser | <p>Three Spray heads are included</p> <p>Ultrasonic spray head for thinner film coating</p> <p>Compressive Air Spray for thick film coating</p> <p>20ml Syringe Pump with compressive air for the expensive solution of the thick film.</p>  <p>Dispensing unit capacity: 50ml & 250ml (two containers included) imension</p> <p>Dispensing rate: 1-20ml / min. adjustable via software.</p> |
| Sprayer | <p>Ultrasonic atomizer nozzle: 40 KHz, 130W</p> <p>producing a fine spray of droplets of 50 microns average size.</p> <p>Sprayer traverse: X - Y 200mm max.</p> <p>Drive speed X axis (min-max): 10-800mm / sec</p> <p>Drive speed Y axis (min-max): 1-12mm / sec</p> <p>Note:you may use inner gas or compress air to enhance spray</p> |
| Pressure Regulator & Gauge | <p>Pressure regulator with digital gauge is installed on the machine for precise air pressure control.</p> <p>Suggested pressure for air-assisted spray is ~3PSI.</p> |





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| Air Pump | One Compact air compressor is included for immediate use 440mm Dia. x 650mm H |
| Substrate Base Plate | Dimension: 150 X 150mm Max. temperature: 500°C PC connectivity: RS232 Port (software included, but need PC for operation) |
| Software | Centralized software control of almost all of the electrospinning parameters One software interface for container loading, draining, XY axis movement and flow rate All of the process parameters can be saved as user program and retrieved for analysis or rerun One brand new laptop computer or one Microsoft Surface Pro with pre-installed software is available for controlling. |
| Warranty | 2 year |
| Compliance | CE Certified |

