CTL CENTER FOR TECHNOLOGY LICENSING AT CORNELL UNIVERSITY

THE TECHNOLOGY

Chemical vapor deposition (CVD) of films on a semiconductor substrate utilizes an ultrasonic nozzle for the direct injection of a fine mist of precursor into the reaction chamber. It has the environmental advantages of metalorganic CVD without the manufacturing complexity of prior, liquid-source CVD methods. After its delivery by an ultrasonic atomizing nozzle, the mist is rapidly vaporized in a low pressure chamber. Injection may be continuous or in discrete measured pulses. Multiple nozzles may be used to deliver different precursors to create films of complex, multicomponent composition. The variety of precursors can include those of low volatility that would decompose on heating.

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Inventors	C. Thomas Avedisian & Vera Versteeg
Licensee	Sono-Tek Corporation

THE PRODUCTS

MediSonic™

The MediSonic™ system features a controlled vacuum ultrasonic spray deposition process, providing continuous films on implantable medical devices. Coating of these devices is intrinsically difficult because of their delicate structures and intricate design. The unique MediSonic™ design applies thin films that can range in thickness from angstroms to many microns. The process can be used to coat three-dimensional or two-dimensional devices with varying thickness and morphology. It is ideally suited for applying continuous, uninterrupted smooth finishes onto medical devices such as stents, pacemakers and other implantables, with no webbing, pin holes or voids.

ThinSonic™ Pulsed CVD Systems

The ThinSonic™ Pulsed CVD System relies on the introduction of a small amount of precursor liquid into an ultrasonic atomizing spray nozzle. The nozzle produces a soft, unpressurized spray of small drops as a short pulse into the top of an evacuated quartz chamber.

The system has proven successful in a variety of Metallic Organic CVD applications, as well as, in CVD applications using polymers. ThinSonic™ CVD applications include electronic coatings on semiconductor wafers, solar cells, fuel cells, and sensors, hardness coatings for wear resistance, and biological coatings for heart valves, hip and knee joints, and dental implants.