



www.labcyte.com

Contact:

Joseph Olechno, Ph.D.
Vice President, Marketing
Labcyte Inc.
1190 Borregas Avenue
Sunnyvale, CA 94089
Toll free: 877 742 6548
Tel: 408 747 2000 x161
Fax: 408 747 2010
email: Joe.Olechno@Labcyte.com

Labcyte Receives 22nd Patent for Restoration of Fluid Volume and Composition Using Acoustics

Sunnyvale, CA, August 23, 2005 – Labcyte Inc. has received U.S. Patent 6,932,097, its 22nd patent, which discloses how to use acoustics to monitor the composition and volume of a fluid and maintain those parameters via active fluid supplementation. In many applications, both chemical and biological, fluid composition can change because of evaporation or absorbance of water from the atmosphere.

“Applications are numerous for the technology described in this patent. High on the list is the active control of the solvent composition in chemical libraries used in the pharmaceutical industry,” said Richard Ellson, Chief Technical Officer. “Dimethyl sulfoxide (DMSO) is the solvent of choice because it so readily dissolves so many different chemicals. Unfortunately, the use of DMSO can lead to various problems. DMSO can evaporate from the plates used to store chemical libraries. Even heat-sealed plates can lose significant volume especially along the edges of the plate. At a minimum, this causes the concentration of the drug candidate to rise as the DMSO is lost. To make the situation worse, water can enter the wells and *lower* the concentration. This occurs since DMSO is very hygroscopic with the ability to absorb its own weight in water. Depending on the environmental conditions, this absorbed water can dilute of the drug candidates by as much as 50%, but worse yet, the water in the DMSO can promote precipitation or accelerate degradation of many chemical compounds in pharmaceutical libraries. False negatives are a common result when compound concentrations drop towards zero. With factors in play that both increase and decrease concentration, how do you know what you have?”

“The techniques taught in this patent provide the researcher with a way to monitor both the volume and hydration of DMSO in sample wells. Just as importantly, it also provides the mechanism to compensate actively for both loss due to evaporation and hydration due to laboratory humidity. Acoustic transfer of new DMSO to the reservoir well can compensate directly for evaporation. Addition of pure DMSO also reduces the concentration of water to levels that prevent chemical precipitation. This patent describes how researchers can take active control of the library samples rather than being a passive subject of laboratory conditions and lets the researcher get better answers in compound screening.”



Labcyte illustrated this process for a 384-well microplate initially filled with relatively “dry” DMSO solutions and then allowed to hydrate in a normal lab environment. Next, the microplate wells were exposed to a dry air stream, leading to a loss of both the water and some DMSO. Acoustic auditing was used to determine change in volume of DMSO and water from the initial samples. The missing materials were transferred back into each well by acoustic transfer to restore the samples to their starting composition. Download a presentation given at MipTec 2005 in Basel, Switzerland for more details on this experiment: <http://www.labcyte.com/news/events/MiptecLabcyte2005.pdf>

Labcyte Inc. is a privately held company that was formed by the merger of Picoliter Inc. and Labcyte, LLC in October 2003. The company, headquartered in Sunnyvale, California, provides a line of compact liquid and plate handling systems, plastic laboratory supplies, as well as the award-winning Echo 550 compound reformatter. The Labcyte acoustic liquid handling technology, including the Echo 550, has broad applications in the life science including dispensing equipment, assay systems, particle manufacturing, microarrays, and living-cell transfer devices. Labcyte has 22 issued U.S. patents as well as additional international filings. For more information, visit the company’s website, www.labcyte.com.

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