

SPBIO® II Spotter Application

Spotting Pin Evaporation 1

A



70 um Flat Pin
Time: 0.0 seconds



70 um Flat Pin
Time: 1.5 seconds

B



70 um X-Cut Pin
Time: 0.0 seconds



70 um X-Cut Pin
Time: 2.0 seconds



70 um X-Cut Pin
Time: 5.0 seconds

C



100 um X-Cut Pin
Time: 0.0 seconds



100 um X-Cut Pin
Time: 2.0 seconds



100 um X-Cut Pin
Time: 5.0 seconds

These spotting pin images display differential evaporation rates by time, pin size and pin shape with a simple aqueous buffer. The temperature was approximately 25°C while the humidity was between 43% and 47%.

Group A displays 70 um diameter pins with a completely flat "tip" where the sample or probe resides before being deposited on the microarray slide. These images dramatically show that after only 1.5 seconds essentially 100% of sample has been evaporated.

By simply changing the design of the spotting pin "tip" to MiraiBio's unique X-Cut design, evaporation rates are greatly reduced as seen in Group B images.

The standard 100 um X-Cut pins shipped with MiraiBio's SPBIO II Spotting System are depicted in Group C. There appears to be little difference in sample volume from the time the sample is first loaded onto the spotting pin and after 2.0 seconds. This is particularly important since this is the amount of time it takes the SPBIO II system to deposit the loaded sample onto the microarray slide.

The 5-second images show significant evaporation of sample regardless of pin size. This mere 5-second delay will cause significant increases in the coefficient of variation (CV) for both spot size and mean fluorescence intensity (MFI) of the completed microarray and ideally should be avoided as when using the SPBIO II system.