Spotting aminosilane slide microarrays

Print microarray
A Genemachine Omnigrid spotter equipped with 16 or 48 Telechem stealth microspotting pins is used. The robot is outfitted with a “print head” containing the pins, which are simply needle like pins with a split tip that takes up several hundred nanoliters of fluid by capillary action, the same mechanism used to load ink into old fashioned fountain pens. The pin dips into a well, takes up DNA solution, and then releases 4 nanoliters sized drop each time it is touched down on a slide. The droplet dries in a few seconds, leaving the DNA spot behind as a “stain”. Once a spot has been transferred to each slide on the platform, the tip is washed in a sonicating water bath and dried with vacuum suction, prior to picking up the next sample to be spotted. In this way, DNA from each well in the plate is transferred to a spot on each slide, and the spots are laid on the slides in a rectangular grid pattern.

Aminosilane coated slides are loaded in the spotter and cleared from dust particles with compressed air. Prior to putting the 384 well plates into the arraying robot for printing, spin down the plates at 400g (1500 RPM for 16 cm plate-to-rotor-axis distance) to bring all condensation down into the wells. Afterwards, keep plates covered and until actually inserted into the arrayer. Immediately after arraying each plate, cover with a new sealing cover and return to −20°C for long-term storage.

Post-spotting treatment
After printing, leave microarrays in spotter-chamber over night. Next day, UV treat slides at optimal energy for 1 minute to cross-link DNA to the aminosilane. Then bake slides at 3 hours at 60°C and 10 minutes at 105°C. When slides have cooled, store at RT for up to a year.

If you are using commercial aminosilane slides, you may want to use the manufacturers recommended protocol.