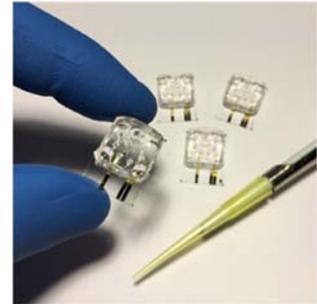


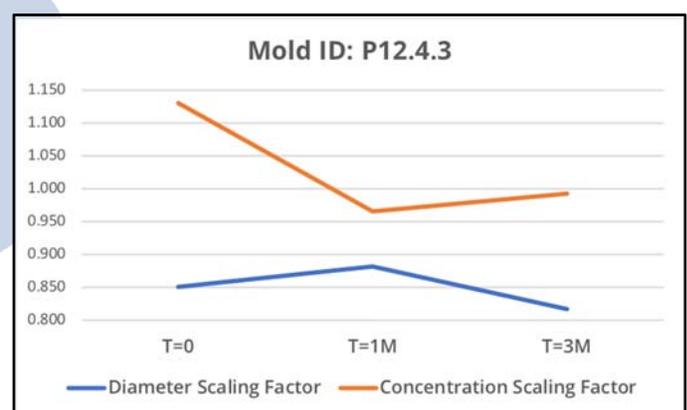
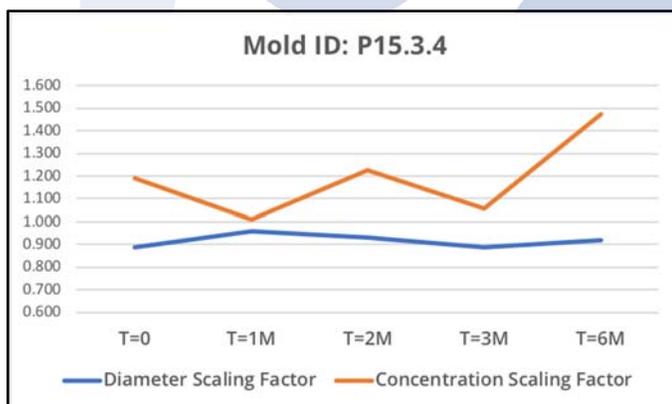
nCS1 Measurement Cartridge Repeatability Over Time

One of the distinct advantages of Spectradyne's implementation of Resistive Pulse Sensing (RPS) is the use of microfluidic-based measurement cartridges. Fabricated using techniques borrowed from the semiconductor industry, each cartridge is cast from a mold, producing very repeatable nanostructures inside the cartridge. This repeatability of structure permits for all cartridges to be factory-calibrated, eliminating the need for further calibration on-site.



The cast part of the cartridge containing all of the nanostructure, is made out of PDMS, which is a flexible silicon. In order to prove that the structure does not change over time, a series of cartridges from the same molds were set aside and measured at different time points with calibration beads. The calibration beads were of known size (NIST-traceable mean size, $\pm 7\%$ per manufacturer's specifications) and concentration ($\pm 10\%$, based upon weight/volume). The size peak was located in the nCS1 DataViewer software, and the software then calculated the scaling factor necessary to scale that peak to fit the known size. For concentration, a similar procedure was used to integrate the bead concentration, and then to calculate the scaling factor necessary to scale the concentration to match the original.

Results from two different cartridge molds are shown below. In both cases, over time, the diameter scaling factor had a CV of 3.3% and 4.3% respectively, well within Spectradyne's internal specification of less than 5% variation from cartridge to cartridge from the same mold (with no time consideration). The concentration scaling had a CV of 8.1% and 8.7% respectively, also well within Spectradyne's internal specification of less than 10% variation from cartridge to cartridge from the same mold (with no time consideration).



In summary, the nCS1's microfluidic measurement cartridges do not show significant variation in calibration values over time. More cartridges from the same molds were set aside at the beginning of this experiment, so that we can continue to take further measurements at future time point to be added.