

The Maurice Background

Maurice was introduced in January 2016 at the WCBP conference in Washington, DC. The response from attendees was overwhelmingly positive and we were humbled by its immediate success. The design objective was to create an instrument platform that was based on the pioneering success of the iCE280 and iCE3, but it would incorporate significant advantages and additional capabilities. As such, Maurice would be the basis for all subsequent investment and further capabilities. Some of the new features have included the addition of native fluorescence for enhanced IEF sensitivity and CE-SDS for purity confirmation, along with an Empower driver. In addition, we are currently developing a fractionation capability that will enable you to collect fractions and analyze them on mass spec; plus, a Turbo CE-SDS™ Cartridge that will reduce time by ~80%.

Maurice was designed to provide unparalleled ease of use and to substantially reduce the amount of user interface required, saving time and cost, and increasing productivity and throughput. This instrument is based on microfluidics (all solutions are in the cartridges) which is critical to achieving these objectives. In addition, multiple components used in the iCE3 fluid path were incorporated directly into the Maurice cartridge, including the 4-port switch valve, associated transfer lines and port fittings, the waste tank and waste line for bulk, the waste vial for the capillary, as well as the electrodes. Finally, Maurice requires less sample material which reduces costs as well.

Significant Maurice Time Savings on Startup and Shutdown

Parameter	Maurice	iCE3
Instrument setup*	5 minutes	5-10 minutes
Cartridge install*	2-3 minutes	20-30 minutes
Software setup*	5 minutes	5-10 minutes
Cartridge Clean-up*	5 minutes	15-20 minutes
Total	17-18 minutes	45-70 minutes
Average	17.5 minutes	57.5 minutes
*depends on pipetting speed & user		
Savings per batch	40 minutes	
Savings per cartridge (assumes 5 batches/cartridge)	200 minutes (3 hours, 20 minutes) = \$333	

Ease of use, safety, and operational benefits of Maurice

1. **Ease of use.** The incorporation of the additional components results in unparalleled ease of use, as the system is truly plug and play. This means that Maurice can be used effectively by technicians and scientists at all levels without the need for extensive training; this frees up senior scientists to focus on designing experiments and interpreting results. This can lead to improved job satisfaction and reduced turnover with its associated hiring costs, delays, and loss of productivity.
2. **Time savings.** There is reduced training, troubleshooting, and instrument cleaning/adjusting which results in significant time savings.
3. **Less troubleshooting.** Maurice eliminates the potential dead air problem experienced when the iCE3 finger-tightened port adaptors are not tightened properly, which leads to peak shifting and the potential loss of the pI marker and basic peak in the window. 'Finger Tighten' is subjective and is often interpreted differently by different scientists. Elimination of this step means that Maurice minimizes troubleshooting and can save 15 minutes to several hours of valuable time.
4. **Save bench space.** Maurice integrates the autosampler, which reduces bench top space by ~20%, saving valuable space for the number of instruments and supplies used in a typical lab.
5. **Enhanced safety.** Maurice improves safety as it provides superior waste containment for safer handling of hazardous samples like antibody-drug conjugates (ADCs), viruses and other toxic samples. No clean up step is necessary for the plumbing and waste vial, simply dispose of the cartridge in a special disposal bin. The cartridge and reagents are all contained behind a closed door so there are no exposed moving parts, eliminating a potential safety hazard.
6. **Superior software.**
 - a. Maurice incorporates a data analysis function in its Compass for iCE software, which is much more intuitive and easier to learn and use than Chrom Perfect.
 - b. The Maurice Empower Control Kit provides a driver that enables Maurice to be controlled by Empower software. This enhances data integrity, reduces software qualification requirements, and eliminates the need to learn an additional software platform. Plus, it creates more flexibility for scientists who can use Empower to review system performance and data remotely.
 - c. Maurice's Compass for iCE software can be networked, enabling multiple systems to be controlled by a single PC, thereby saving on space and resources in the lab.
 - d. Compass for iCE software is developed and maintained by ProteinSimple, which means that no third-party interaction is required when performing software updates or changes.
7. **State-of-the-art cartridges.** Maurice cartridges have numerous features aimed at unparalleled ease of use and robustness.
 - a. The Maurice cartridges are 'self-seating' which is faster and eliminates the need to carefully align/install as with the iCE3 cartridge.
 - b. The cartridges can be filled with electrolytes at the bench so that everything is ready to go when using an instrument in a different lab.

- c. There are far fewer dust particles on the window which reduces preparation time as most users do not air dust the Maurice window as they typically do with the iCE3 cartridge.
 - d. Maurice cartridges are equipped with RFID tags to make it easier to track cartridge usage. This tracking capability prevents the cartridges from being used past their maximum usage, ensuring data quality and integrity.
 - e. Maurice cartridges are automatically cleaned at the end of the run, reducing variability in data quality between cartridge preparations.
 - f. Maurice cartridges are pre-checked for clogs at the start of the run, allow for early troubleshooting and avoiding time and sample waste.
8. **Enhanced detection.** Maurice offers Native Florescence with increased sensitivity of ~4x compared to absorbance. This helps eliminate the additional time required to concentrate and buffer exchange low concentration samples. Plus, Native Florescence is helpful to troubleshoot spurious peaks sometimes observed with the iCE3 that were due to air bubbles or particles, thereby eliminating the need to prepare and run another batch due to these spurious peaks.
 9. **Built-in automation.** Maurice has onboard mixing built into the system with pre-defined volumes and mix parameters. This is useful for samples that may not be stable in the ampholyte master mix and helps to improve automation and throughput. The volumes and mix parameters being pre-defined makes it easy to use with no time-consuming optimization required.
 10. **Self-test capability.** Maurice has a built-in self-test capability, which allows the operator to perform a test of the system hardware to ensure proper system operation before commencing a run. This can also be used when troubleshooting a problem with technical support.

Cost Savings on Drug Samples

Maurice uses less sample volume which saves money and is critical for samples with limited availability:

Sample volume per Injection:

Maurice 6-8uL

ICE3+Alcott 15-20uL

ICE3+PrinCE 8-12uL

Maurice saves 9-12uL compared to iCE+Alcott and 2-4uL compared to iCE+Prince