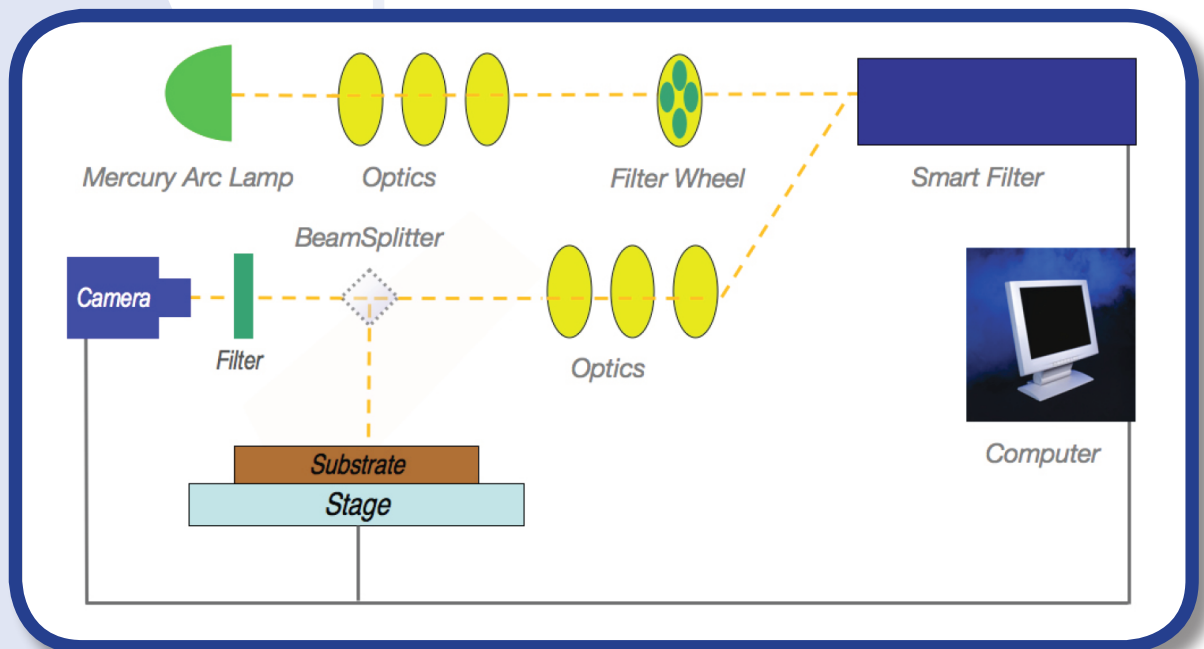


SF-100 System Performance Microfluidics Research Option



In order to gain the maximum benefit of the SF-100 product family for microfluidics research, Intelligent Micro Patterning has developed the Microfluidics Research Option (MRO) for all SF-100 platforms.

A schematic of an SF-100 system with the MRO is shown below.



The system starts with a standard SF-100 platform and then adds functionality that supports microfluidics research. These additional capabilities include:

- Substrate heating and cycling for temperatures up to 120°C for precise substrate heating and temperature control.
- Modified substrate stage that supports permanent mounting of fluidic support hardware (such as liquid delivery hardware, valving, etc) to make device removal and installation quick and easy.
- Removable substrate holder for quick clean up of spills and easy substrate size changes.
- Use of a standard 1" round filter between the beam splitter and camera for viewing specific wavelengths of emission energy from the substrate.

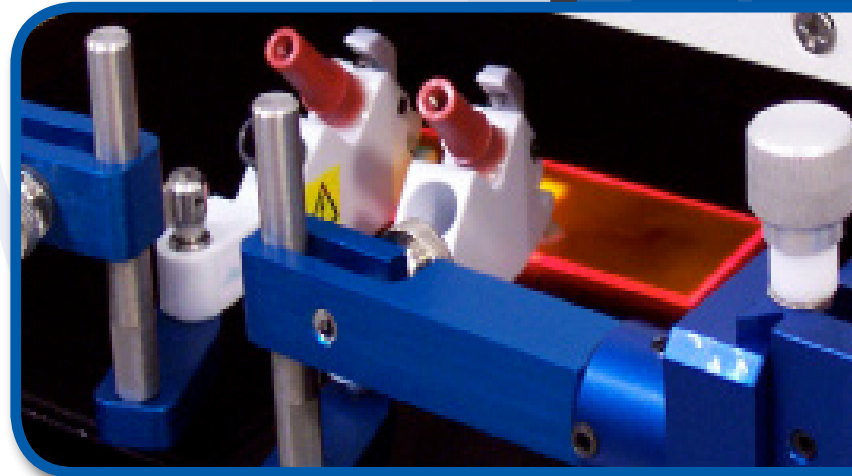
**SF-100
XPRESS**

**SF-100
XTREME**

Features and Benefits of the Microfluidic Research Option on an SF-100 System.

In addition using an SF-100 for standard photolithography patterning, the above enhancements provide the microfluidic researcher with the following capabilities:

- **Vary Excitation and Emission Spectra** by using a myriad of standard filters in both the filter wheel and in front of the camera. Excitation energies can be varied on a pixel-by-pixel basis through individual micro mirror control on the smart filter subassembly. Both filter locations utilize standard 1" wavelength filters, so any commercially available filters of this size can be used in either location.
- **Capture Events Using the Integrated CCD Camera.** Video and still image capture are available as standard on the system. Further image capture customization is available through the use of National Instruments Vision Development Software, which is fully compatible with the imaging camera and IMP software controls.
- **Integration of Other Microfluidic Operations and Systems** is available through the open software platform, availability of open digital and analogue I/O's, and National Instruments LabWindows platform.
- **Fluidics and Emission Light Can Be Altered Simultaneously** using the SF-100 control software.
- **Allow for Gray Scale Spatial Illuminations and Fluorescence Imaging.** This permits fluorescence imaging and photoinitiation with photobleaching control and optimization for the fluorophores of your choice. The spatial and temporal control of excitation and emission light permits cycling and variations at any point during fabrication, testing, or data recording.
- **Dynamic Imaging of Microfluidic Environments** and adaptive sampling of fluorophore targets.
- **Control and Research Using Flow Fluorimetry.** Create particle image velocimetry (PIV) like conditions to measure velocities and related properties in fluids using fluids seeded with particles for the purposes of PIV, for following flow dynamics and calculating velocity information. Mega pixel sensor and image/video capture machine vision software allow pattern and geometric matching, particle analysis, and edge detection for identification.
- **Measure Particles in Flow** for particle trajectories, motion, and size distributions.
- **Novel Research Efforts** using the SF-100 as a light pattern generator with image and fluorescence image analysis.



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