

# VERNEWELL miniMOT V2



Quickly create and  
control quantum matter

Whether you're a seasoned researcher, physics educator, or product developer, the **miniMOT V2** is the ideal compact, ultra-high vacuum (UHV) trapped atom system.

- Provide students with hands-on experience using lasers, optics, and quantum matter
- Implement quantum matter in research experiments immediately
- Prototype and develop neutral atom products for quantum computing or sensing applications

## Applications

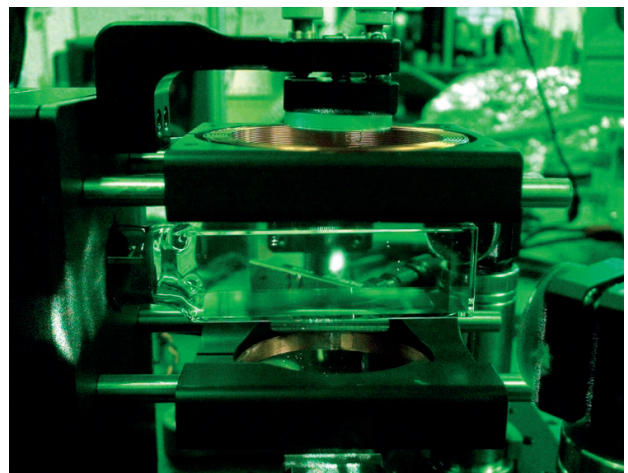
The **miniMOT V2** is a versatile tool for performing a wide range of fundamental physics experiments, exploring theoretical quantum concepts, and various applications involving rubidium and cesium cold atom MOTs.

### Theoretical Quantum Concepts:

- Electromagnetically induced transparency
- Atomic structure and spectra
- The Zeeman effect
- The Doppler effect
- Scattering

### Experimental Concepts & Techniques:

- Atomic spectroscopy
- Optics and optical techniques
- Lasers and laser beam delivery
- Feedback and control systems
- Measurements and error analysis



*Infrared image of the trapped atoms in a miniMOT*



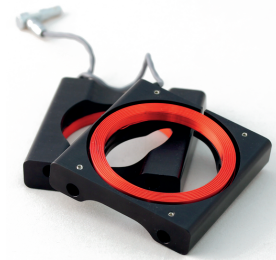
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## miniMOT V2

### System Specifications

Vacuum Quality	$<1 \times 10^{-8}$ Torr
Cell Clear Aperture	54 x 19 mm (side walls) 10 mm dia. min. (end cap)
Magnetic Field Gradient	$\pm 0-14$ G/cm
External Dimensions	5.9 x 4.7 x 11.8 in 149 x 119 x 298 mm
Center Cell Height	3.50 in / 89 mm
Weight	7.2 lb / 3.3 kg

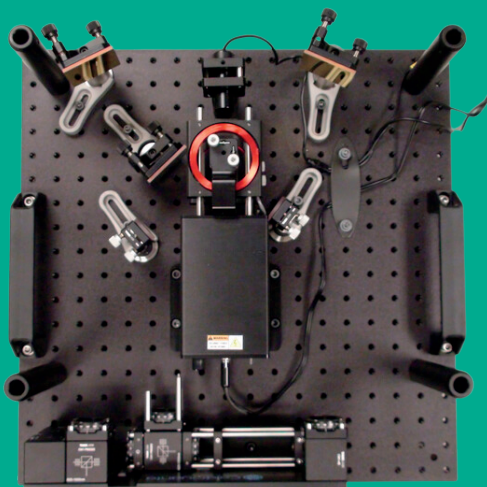
- The **miniMOT V2** provides industry-leading vacuum quality and best-in-class optical access when configured with Infleqtion's UHV glass cells.
- Field gradients of up to 14 G/cm are possible at 1 A utilizing our **miniMOT Coils** (pictured below).



### Product Features

- Compact UHV system suitable for MOT production from a background vapor
- Active and passive pumps to maintain vacuum quality over several years of operation
- Integrated electronics for vacuum control, alkali atom pressure control, and to drive the miniMOT coils
- Intuitive touchscreen interface for seamless user control of system operation
- Shipped under vacuum and ready for immediate use

### Save time and effort with the miniMOT Package upgrade



- Create MOTs of rubidium or cesium in hours rather than months with our simple, pre-assembled setup
- Includes fiber-coupled optics, aligned lenses, mirrors, and laser beam guided to the center of Infleqtion's glass cell for rapid deployment



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