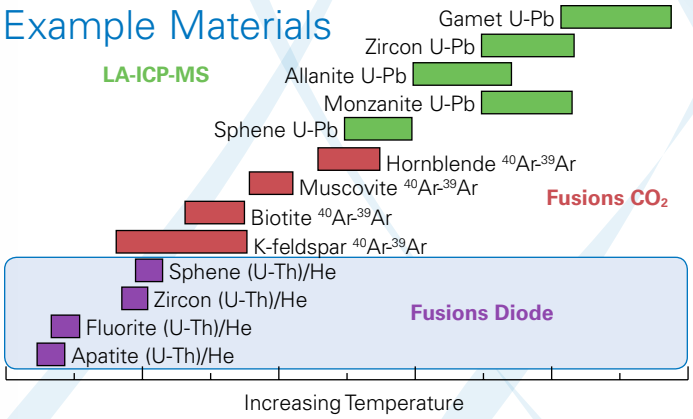
Fusions Diode

Stepped Heating System

Application Areas

Geochronometry
Thermochronometry
Noble Gas Isotope Ratio Analysis
$^{4}He/^{3}He$ Dating

Example Materials



About the Fusions Diode

The Fusions Diode is a diode-laser based system for controlled heating of samples within micro-furnace packets to the point of fusion. The Fusions Diode enables the use of high capacity, multiple well, HV sample chambers and provides localized heating of samples in diffusion cells without the use of a furnace. This unique system features co-linear targeting, stepped heating and spot-on temperature measurements through a standard sapphire viewport.

Fusions Diode features simultaneous viewing of the sample via a color, camera that is coaxial with the laser beam for precise targeting and temperature control. Flood lighting of the sample eliminates shadows and dark zones caused by deep wells and when observing samples close to the edge of the viewport.

The Fusions Diode is equipped with an optical pyrometer that measures sample temperature within the area heated by the laser beam for spot-on measurements.

Key Features

Laser

- 75 W water cooled diode laser with controller & power supply
- Continuously variable power from ~1W to max. output over 5000 steps
- Water flow interlock

Viewing Optics and Video

- Video zoom microscope with live images
- Motorized zoom magnification video microscope
- FOV from 5.3mm to 34mm (Horizontal)
- Color CCD camera

Beam Delivery Unit (BDU)

- Motorized spot selection from ~125 µm to 4.5 mm
- F/O ring light with software controlled variable intensity illuminator
- BDU combines laser, CCD, ring light and power meter for coaxial/coplanar performance

Motion Control

- Motion control tower supports and moves the laser, beam delivery unit, optical system and pyrometer over a stationary sample chamber (not provided)
- 52 mm motorized XYZ travel, all axes
- 1 µm resolution
- 3-axis stage motor controllers

19" Rack Mount Electronics

Class IV laser enclosure and mounting hardware

TELEDYNE
PHOTON MACHINES
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INVISIBLE LASER RADIATION
AVOID EYE OR SKIN EXPOSURE TO
DIRECT OR SCATTERED RADIATION
Wavelength: 0.8 µm / 100 W
CLASS 4 LASER PRODUCT

CETAC Technologies and Photon Machines joined forces back in June 2010 with a view to advance laser ablation technology for elemental analysis, and to offer a full range of products globally. This collaboration brought together the experience in Photon Machines' design team with the sample introduction expertise of CETAC. This partnership has taken the next natural step and both companies have merged under the Teledyne Instruments banner.

Teledyne Photon Machines, a brand of Teledyne CETAC Technologies, provides laser ablation systems including CO_2 and diode lasers, 213 nm solid state Nd:YAG, 193 excimer laser systems and femtosecond laser systems. In addition, the company provides accessories to enhance the capabilities of laser ablation systems.

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