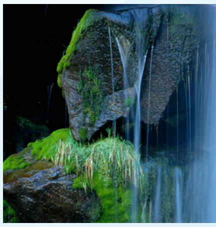
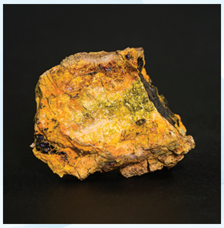
HORIBA

Fluorolog-QM-LAS-01C

Laser Induced Fluorometer/Phosphorimeter (LIF/LIP)





Determination of Uranium by Laser Induced Phosphorescence Analysis

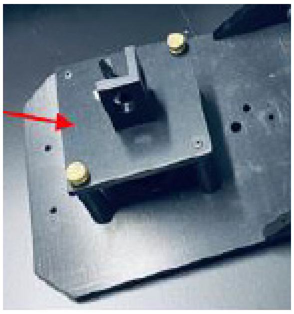
Overview

The HORIBA Fluorolog-QM-LAS-01C is a benchtop laser-induced fluorometer (LIF) and phosphorimeter (LIP) that is ideal for the determination of ultra trace uranium concentration by phosphorescence analysis. Specifically, it can be used to measure uranium in water, urine, and other environmental samples, such as contaminated groundwater and sediment[1].

The detected phosphorescent-active uranates are essential in radioactive waste management. The Fluorolog-QM-LAS-01C is configured with a 438 nm pulsed laser that can be operated in pulsed or continuous modes to allow the system to measure gated phosphorescence, phosphorescence decays and steady state fluorescence and phosphorescence spectra. Beyond just uranium, the system can be used for a variety of fluorescence and phosphorescence experiments of samples in solution that absorb light in the 438 nm region.

Reference ASTM D5174-07 standard test method for determining trace uranium in water using pulsed-laser phosphorimetry[2]. This ASTM method also references Uraplex, which is used as a complexing agent. Sodium hexametaphosphate solution has been found to be a suitable substitute for Uraplex. Uranium standards and complexing agents not included with Fluorolog-QM-LAS.

Fluorolog-QM-LAS-01C shown with sample compartment lid open



10x10mm cuvette sample holder (cuvette not shown)

Key Features and Benefits

- Compact Class 1 embedded, Class 4 laser system
- For liquid samples in a cuvette
- Entire decay curves acquired in milliseconds
- ASTM Method for concentration of uranium standards
- Identify uranium isotopes with phosphorescence decays[3]
- Easy to use software

Specifications

Model Number		Fluorolog-QM-LAS-01C
Laser Classification		Class 1 embedded, Class 4 laser system, following ANSI standards for laser-induced fluorescence/phosphorescence (LIF/LIP) of uranium and other materials
Laser		500 W, 438 nm DPSS excitation laser (Class 4)
Collection Optics		All reflective L-Format optics sample compartment
Sample Holder		Room temperature, single cuvette holder for 10 mm quartz cuvette for samples in solution (2 ml of sample). Optional solid sample holder trays are also available (contact HORIBA).
Sample Compartment		Single cuvette sample tray, manual filter holders for customer supplied filters, Class 1 laser interlocks, lid interlock and laser beam dump
Emission Monochromator		Single emission 350 mm Czerny-Turner coma-corrected monochromator, with triple grating turret for extended wavelength selection (one 1200g/mm, 400nm blazed grating included, others may be selected at time of order) and computer controlled slits
Emission Detector		Cooled PMT housing with R928 PMT (185 to 980 nm) detection modes selected under computer control for steady state spectra in photon counting or analog mode, and single shot transient digitizer (SSTD) for gated phosphorescence and phosphorescence lifetimes
Computer, Software & Electronics		Windows® computer configured with Felix FL comprehensive fluorescence spectroscopy acquisition and analysis software package, manual and electronic interface
Dimensions	**Length**	30 in (762 mm)
	Width	30 in (762 mm)
	Height	16 in (406.4 mm)
Safety Compliance		FDA Accession # 2420750-000

References

[1] Radioactive Waste Management (2 ed.). New York: Taylor & Francis. p. 2. ISBN 978-1-56032-842-1. Saling, James H.; Fentiman, Audeen W. (2002).
[2] ASTM D5174-07 is a standard test method for determining trace uranium in water using pulsed-laser phosphorimetry. Uranium standards not included with system.
[3] Resolution of uranium isotopes with kinetic phosphorescence analysis, Journal of Radioanalytical and Nuclear Chemistry, September 26, 2012, Volume 296, pages 923-925

info.sci@horiba.com www.horiba.com/fluorescence

USA: +1 732 494 8660
UK: +44 (0)1604 542 500
China: +86 (0)21 6289 6060
Taiwan: +886 3 5600606
France: +33 (0)1 69 74 72 00
Italy: +39 06 51 59 22 1
India: +91 80 41273637
Brazil: +55 (0)11 2923 5400
Germany: +49 (0) 6172 1396 0
Japan: +81(75)313-8121
Singapore: +65 (0)6 745 8300
Other: +33 (0)1 69 74 72 00