Fluorat-02

Fluorimetric & photometric liquid analyzer

Phosphorimetric determination of **uranium** in water



INTRODUCTION

Uranium in water can pose a risk to human health due to its chemical toxicity, which primarily affects the kidneys and may lead to renal damage. Even at low concentrations, uranium requires reliable techniques to be measured in drinking water and environmental samples.

Lumex Instruments has developed an accurate method for the phosphorimetric determination of uranium in water using Fluorat-02-4M analyzer. This method offers high sensitivity without the need for expensive instrumentation and tedious sample preparation.

MEASUREMENT RANGE

Measurement range, µg/L (ppb)	Directives & standards for drinking water	MAC (MPL), µg/L
2–1000 (natural, drinking, and waste water)	WHO Guidelines for drinking water quality (2026)	30
	Directive (EU) 2020/2184	30
	US EPA National Primary Drinking Water Regulations (NPDWR)	30
	GB 5749-2022 Standards for drinking water quality	30
	IS 10500:2012 Drinking water – Specification	30
	AERB permissible limit for uranium in drinking water (2004)	60
	Portaria GM/MS No 888/2021	30

Samples with higher uranium content should be diluted prior to analysis.
The influence of the sample matrix is excluded by using the method of standard addition.

METHOD

To determine uranium in water, the phosphorescence intensity of uranyl-ions (λ=530 nm) excited by ultraviolet radiation is measured. Sodium polysilicate (pH=8–10) is added to enhance luminescence intensity. Interfering influence caused by luminescence is eliminated by using the special mode of Fluorat-02-4M with a time gap between excitation impulse and photons counting.
When phosphorescence intensity is measured the result is displayed as uranium content in water presented in µg/L.
Sample should be preserved by adding concentrated nitric acid; after that sample can be stored for 1 month.

HIGHLIGHTS OF LUMEX INSTRUMENTS PHOSPHORIMETRIC METHOD

- Affordable price for instrument and reagents.
- Detection limit is lower than uranium content in uncontaminated natural and drinking water samples.
- Easy-operating: no sample heating and drying, no oxidizing agents required.

LUMEX INSTRUMENTS OFFER

- Fluorat-02-4M filter fluorimeter
- FluoRate software (complies with all requirements of FDA 21 CFR Part 11 & is suitable for use within analytical systems complying recommended principles of GMP)
- Equipment qualification (IQ/OQ)
- Lumex Instruments Kit for the determination of Uranium in water, incl. light filters, quartz cell, PTFE or polypropylene vials
- Training

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The information and specifications in this publication are subject to change without notice.

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