

# RA-915 Series

Zeeman mercury analyzer



## Direct mercury determination in biosamples

### INTRODUCTION

The World Health Organization (WHO) recognizes mercury (Hg) as one of the top 10 chemicals of major public health concern. Both metallic mercury and its inorganic and organic compounds are highly toxic to humans. Mercury exposure level is usually determined through analysis of blood, hair, nails, urine, and other biosamples. Forensic studies may also measure mercury levels in the skin and internal organs.

Lumex Instruments offers a thermal decomposition method for the direct analysis of any biological samples at ppb levels, using RA-915 series mercury analyzers based on atomic absorption spectroscopy with Zeeman correction of the background absorption (ZAAS). This technology enables rapid screening of mercury exposure, risk groups revealing, and monitoring during treatment and rehabilitation after mercury intoxication. The equipment can be used either at stationary or mobile laboratories.

### MEASUREMENT METHOD

The direct thermal decomposition method, when combined with ZAAS, eliminates the need for time-consuming sample pretreatment procedures and the intermediate step of mercury preconcentration at a gold trap. The sample is heated in the thermal decomposition chamber of the analyzer. Mercury compounds are evaporated and dissociated forming elemental mercury. All the gaseous products are transported into the heated analytical cell by a Hg-free ambient air, and the mercury atoms are then detected by ZAAS having the highest selectivity of the analysis. Range of measurement 1 – 10,000 ppb ( $\mu\text{g}/\text{kg}$ )

### ANALYSIS FEATURES

- no sample pretreatment with wet chemistry;
- low limit of detection, high selectivity;
- wide dynamic measurement range: more than 5 orders of magnitude;
- no amalgamation step;
- high analysis throughput (1–3 minutes per sample);
- no need for reagents and cylinders of oxygen, argon, or other compressed gases;
- low running cost;
- no memory effect;
- the CRM of any matrix can be used for calibration and QA/QC.

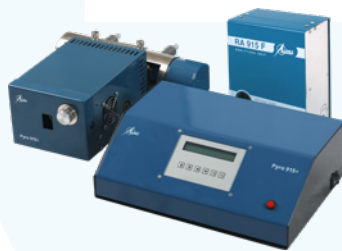
### EQUIPMENT AND REAGENTS

The following equipment and materials are used for analysis:

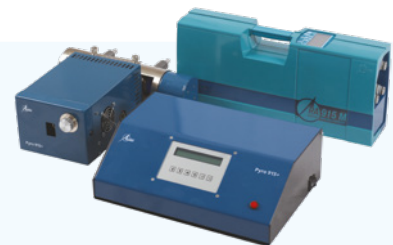
- RA-915 series mercury analyzer: RA-915 Lab, RA-915F, or RA-915M combined with PYRO-915+ attachment;
- PC with Windows® and RAPID software;
- any solid or liquid CRM of mercury;
- Lumex Instruments kit, order No 0300003035.



RA-915 Lab



RA-915F



RA-915M with PYRO-915+



[www.lumexinstruments.com](http://www.lumexinstruments.com) | [sales@lumexinstruments.com](mailto:sales@lumexinstruments.com)

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

24AEN08.05.01-1