

RA-915⁺ ZEEMAN MERCURY ANALYZER

List of selected publications

1990

Palinkaš A. L., Sholupov E. S., Mashyanov R. N., Durn G., Miko S. Mercury in atmosphere over rural, urban and industrial parts of Zagreb City // Rudarsko-Geološko-Naftni Zbornik. – Zagreb, 1990. – T. 2. – P. 19–27.

1992

Ganeev A. A., Dreval T. V., Ilyin Yu. T., Mashyanov N. R., et al. Mercury haloes in the marine atmosphere above tectonic structures and gas-hydrate deposits // Abstr. International Symposium "Unconventional Hydrocarbons: Sources, Problems of Exploration and Production" (St. Petersburg, Russia, October 12–16, 1992). – V. 2. – P. 58–60.

Miko S., Durn G., Palinkaš L. A., Mashyanov N. R., Namjesnik, K., Ilyn, Y. T. Distribution of mercury, and aerosols of lead and cadmium in the atmosphere of Zagreb // Mining and Metallurgy Quarterly (Ljubljana) – 1992. – V. 39. – No. 3–4. – P. 369–387.

Ozerova N. A., Mashyanov N. R., Ryzhov V. V., et al. Naphthametallogeny of the mercury // Abstr. International Symposium "Unconventional Hydrocarbons: Sources, Problems of Exploration and Production" (St. Petersburg, Russia, October 12–16, 1992). – V. 1. – P. 114–115.

1994

Gruntorád J., Ilyin Yu. T., Mashyanov N. R., et al. Prvé zkušenosti s mercurimetrickim monitorováním z pohledného stanovise na území České republiky // Uhlí, Rudy, Geologický Průzkum. – 1994. – № 12. – S. 1–9. (*In Czech*).

1995

Ganeev A. A., Pogarev S. E., Ryzhov V. V., Sholupov S. E., Dreval T. V. The new method for direct and express determination of mercury in oil, gas condensate, and biological samples // Journal of Ecological Chemistry. – 1995. – No. 4. – P. 122–126.

Mashyanov N. R., Reshetov V. V. Geochemical ecological monitoring using remote sensing technique // The Science of the Total Environment. – 1995. – V. 159. – No. 2–3. – P. 169–175.

Pogarev S. E., Ryzhov V. V., Dreval T. V., Mashjanov N. R. Using Zeeman atomic absorption spectrometer for mercury detection in urine // Journal of Ecological Chemistry. – 1995. – V. 4. – No. 2. – P. 118–121.

Sholupov S. E., Ganeev A. A. Zeeman absorption spectrometry using high frequency modulated light polarization // Spectrochimica Acta Part B: Atomic Spectroscopy. – 1995. – V. 50. – No. 10. – P. 1227–1236.

1996

Altman E., Panichev N. Determination of metal content of airborne particle matter by ETA-AAS – prospects and problems // Proc. 2nd European Furnace Symposium (St. Petersburg, Russia, May 26–30, 1996). – P. 18.

Altman E., Panichev N., Kvitko K. Biotransformation of chemical forms of Cd by bacteria in polluted water reservoirs // Proc. Joint Annual Meeting WINNIPEG-96 (Winnipeg, Canada, May 27–29, 1996) / Geological Association of Canada. – P. 7.

Altman E., Panichev N., Turunov Yu. Relation between variations metal content in expired air and diseases of human lungs // Proc. 2nd International Symposium on Modern Principles of Air Monitoring AIRMON-96 (Sälen, Sweden, February 5–8, 1996). – P. 2.

Dreval T. V., Mashyanov N. R., Ryzhov V. V., Sholupov S. E., Reshetov V. V., Sobolev M. B., Vorms V. V. Mercury in the atmosphere of St. Petersburg – distribution, origins and influence on human health // Proc. 4th International Conference "Mercury as a Global Pollutant" (Hamburg, Germany, August 4–8, 1996). – P. 217.

Goltsova N. I., Pitulko V. M., Mashyanov N. R. The role of mercury in impact pollution mechanisms on boreal forest // Proc. 4th International Conference "Mercury as a Global Pollutant" (Hamburg, Germany, August 4–8, 1996). – P. 337.

Gosar M., Pirc S., Sajn R., Bidovec M., Mashyanov N. R., Sholupov S. E. Mercury in the air: pollution in Idrija, Slovenia // Proc. 4th International Conference "Mercury as a Global Pollutant" (Hamburg, Germany, August 4–8, 1996). – P. 468.

Miko S., Palinkaš L. A., Durn G., Mashyanov N. R., Sholupov S. E. Geochemical prospecting for gold in the tributaries of the Mentebah and Tenangun rivers in Central Kalimantan, Indonesia // Proc. International Conference on "Regularities of the Evolution of the Earth Crust" (St. Petersburg, Russia, October 15–18, 1996). – V.1. – P. 133.

Ozerova N. A., Chernova A. I., Mashyanov N. R., Ryzhov V. V., Sveshnikov G. B., Pikovsky Yu. I., Leontyev I. A., Dobryansky L.A., and Zherebtsov Yu. D. Mercury in gas and oil deposits // Proc. 4th International Conference "Mercury as a Global Pollutant" (Hamburg, Germany, August 4–8, 1996). – P. 336.

Ozerova N. A., Sveshnikov G. B., Mashyanov N. R., Ryzhov V. V., Sholupov S. E., Pogarev S. E., Ganeev A. A., Pikovskiy Yu. I. New aspects in mercury geochemistry // Закономерности эволюции земной коры: Междунар. конф., С.-Петербург, 15–18 октября 1996 г.: Тез. докл. – СПб., 1996. – Т. 2. – С. 16.

Pogarev S. E., Ryzhov V. V., Dreval T. V., Mashyanov N. R. Mercury values in urine from inhabitants of St. Petersburg // Proc. 4th International Conference "Mercury as a Global Pollutant" (Hamburg, Germany, August 4–8, 1996). – P. 222.

Sholupov S. E., Ganeev A. A., Zhang J. ATMOS HG – A new mercury spectrometer // Proc. 4th International Conference "Mercury as a Global Pollutant" (Hamburg, Germany, August 4–8, 1996). – P. 48.

1997

Gosar M., Pirc S., Mashyanov N. R., et al. Distribution of mercury in atmosphere over Idrija, Slovenia // Environmental Geochemistry and Health. – 1997. – V. 19. – No. 3. – P. 101–112.

Ganeev A. A., Slyandev M. N., Sholupov S. E. Analytical features of Zeeman atomic absorption spectrometry using high frequency modulated light polarization with the discharge atomization // Abstr. Beijing Conference on Instrumental Analysis BCEIA-97 (Shanghai, China, October 13–17, 1997). – P. N-53.

Ganeev A. A., Slyandev M. N., Sholupov S. E. Thin-walled metallic hollow cathod as an atomizer for analytical atomic spectroscopy // Abstr. Analytical Conference ASIA V (Fukuoka, Japan, May 3–5, 1997). – P. 103.

Muradov A. Yu., Sobolev M. B., Mashyanov N. R., Ryzhov V. V., Pogarev S. E. Estimation of pathological reactions risk degree after short-term mercury vapour affect

on the children // Proc. Conference on Human Health Effects of Mercury Exposure (Tórshavn, Faroe Islands, June 22–26, 1997).

Pogarev S. E., Ryzhov V. V., Mashyanov N. R., Sobolev M. B. Mercury values in urine from inhabitants of St. Petersburg // Water, Air and Soil Pollution. – 1997. – V. 97. – No. 1–2. – P. 193–198.

Sobolev M. B., Mashyanov N. R., Ryzhov V. V., Pogarev S. E. Oxaluria as an indicator of tolerance for mercury vapour exposure // Proc. Conference on Human Health Effects of Mercury Exposure (Tórshavn, Faroe Islands, June 22–26, 1997).

Spiric Z., Mashyanov N. R., Ryzhov V. V., Pogarev S. E. Determination of low mercury concentrations in ambient air with portable mercury spectrometer – RA 915 // Proc. 1st Croatian Conference "Ambient air protection" (Crikvenica, Croatia, October 16–18, 1997). – P. 521–525.

1998

Ganeev A. A., Sholupov S. E. A thin-walled metallic hollow cathode as an atomizer for Zeeman atomic absorption spectrometry // Spectrochimica Acta Part B: Atomic Spectroscopy. – 1998. – V. 53. – No. 3. – P. 471–486.

Ryzhov, V. V., Mashyanov, N. R., Ozerova, N. A. Variations of mercury content in natural gas // Proc. the Fifth Ukraine International Oil and Gas Conference "Oil and Gas Ukraine-98" (Poltava, Ukraine, 1998). – V. 2. – P. 230.

Ryzhov V. V., Mashyanov N. R., Sholupov S. E., Pogarev S. E., Sveshnikov G. B., Ganeev A. A. New possibilities of mercury analysis in hydrocarbons using Zeeman atomic absorption spectroscopy // Proc. the Fifth Ukraine International Oil and Gas Conference "Oil and Gas Ukraine-98" (Poltava, Ukraine, 1998). – V. 2. – P. 229.

1999

Mashyanov N. R., Ryzhov V. V., Reshetov V. V. Origins of mercury pollution in St. Petersburg region // Proc. 5th International Conference "Mercury as a Global Pollutant" (Rio de Janeiro, Brazil, May 23–27, 1999). – P. 550.

Ozerova N. A., Chernova A. E., Mashyanov N. R., Antipov A. B. Mercury in the ore-bearing newly formed deposits of the world ocean // Proc. 5th International Conference "Mercury as a Global Pollutant" (Rio de Janeiro, Brazil, May 23–27, 1999). – P. 179.

Ozerova N. A., Mashyanov N. R., Pikovsky Yu. I., Ryzhov V. V., Chernova A. E., Ganeev A. A., Sholupov S. E., Dobryansky L. A. Mercury in gas and oil deposits // Mercury Contaminated Sites: Characterization, Risk Assessment and Remediation / Ed. by Ralf Ebinghaus, Ralph R. Turner, Luiz D. de Lacerda. – Berlin: Springer-Verlag, 1999. – P. 237–246.

Ryzhov V. V., Mashyanov N. R., Ozerova N. A., Pogarev S. E. Regular variations of mercury contents in natural hydrocarbon gas // Proc. 5th International Conference "Mercury as a Global Pollutant" (Rio de Janeiro, Brazil, May 23–27, 1999). – P. 180.

Sholupov S. E., Ganeev A. A., Pogarev S. E., Ryzhov V. V. Thermospectrometry of mercury organic and inorganic species // Proc. 5th International Conference "Mercury as a Global Pollutant" (Rio de Janeiro, Brazil, May 23–27, 1999). – P. 20.

Sholupov S. E., Ganeev A. A., Ryzhov V. V., Pogarev S. E., Stroganov A. A. RA-915 – a novel portable Zeeman atomic absorption spectrometer for determination of low levels of mercury in air and complex matrix samples // Proc. 5th International Conference "Mercury as a Global Pollutant" (Rio de Janeiro, Brazil, May 23–27, 1999). – P. 40.

Song Wei, Wu Jian, Wang Zhengfan, Ding Hui. Determination of trace total mercury in natural gas by cold vapor absorption spectrometry method // *Modern Scientific Instruments*. – 1999. – No. 4. – P. 51–52. (*In Chinese*).

Spiric Z., Dragas M., Vadunec J., Mashyanov N. R., Ozerova N. A. Investigation of mercury content in Podravina gas fields and environment // *Proc. 6th International Petroleum Environmental Conference* (Houston, USA, November 16–19, 1999).

Spiric Z., Mashyanov N. R. Mercury measurements in ambient air during natural gas production with portable Zeeman mercury spectrometer – RA 915 // *Proc. 5th International Conference "Mercury as a Global Pollutant"* (Rio de Janeiro, Brazil, May 23–27, 1999). – P. 12.

2000

Ozerova N. A., Antipov A. B., and Mashyanov N. R. Hg degasation within the Kamchatka-Pacific frontier region // *Proc. 3rd Workshop on Land Ocean Interactions in the Russian Arctic (LOIRA) devoted to 100-th anniversary of G. A. Ushakov* (Moscow, Russia, December 5–8, 2000). – P. 110–111.

Spiric Z., Mashyanov N. R. Mercury measurements in ambient air near natural gas processing facilities // *Fresenius Journal of Analytical Chemistry*. – 2000. – Vol. 366. – No. 5. – P. 429–432.

2001

Bin C., Xiaoru W., Lee F. S. C. Pyrolysis coupled with atomic absorption spectrometry for the determination of mercury in Chinese medicinal materials // *Analytica Chimica Acta*. – 2001. – V. 447. – No. 1–2. – P. 161–169.

Markelov M., Bershevits O. A. Methodologies of quantitative headspace analysis using vapour phase sweeping // *Analytica Chimica Acta*. – 2001. – V. 432. – No. 2. – P. 213–227.

Mashyanov N. R., Ozerova N. A., Ryzhov V. V. Resources of mercury in gas deposits as related to its spatio-temporal variability in hydrocarbon gases // *Proc. 6th International Conference "Mercury as a Global Pollutant"* (Minamata, Japan, October 15–19, 2001). – P. 58.

Mashyanov N. R., Sholupov S. E., Ryzhov V. V., et al. Detection of pollution sources using continuous mercury automobile survey // *Proc. 6th International Conference "Mercury as a Global Pollutant"* (Minamata, Japan, October 15–19, 2001). – P. 58.

Ozerova N. A., Mashyanov N. R. Mercury ecogeochemistry // *Proc. 6th International Conference "Mercury as a Global Pollutant"* (Minamata, Japan, October 15–19, 2001). – P. 140.

Pogarev S. E., Ryzhov V. V., Sholupov S. E., Zharskaya V. D. Mercury in the exhaled air, blood and urine among persons exposed to elemental mercury // *Proc. 6th International Conference "Mercury as a Global Pollutant"* (Minamata, Japan, October 15–19, 2001). – P. 79.

Ryzhov V. V., Mashyanov N. R., Pogarev S. E., Ozerova N. A.. Short-term variability of the mercury content in hydrocarbon gases as an indicator of dynamic processes in the lithosphere // *Proc. 6th International Conference "Mercury as a Global Pollutant"* (Minamata, Japan, October 15–19, 2001). – P. 145.

Sholupov S. E., Markelov M., Siperstein J. Effect of external conditions (air temperature and pressure) on the determination of mercury content in ambient air // *Proc. 6th*



International Conference "Mercury as a Global Pollutant" (Minamata, Japan, October 15–19, 2001). – P. 49.

Sholupov S., Markelov M., Siperstein J., Dechant D. Rapid screening of solid samples for mercury using pyrolysis option with portable RA-915 mercury analyzer with Zeeman correction // Proc. Pittsburg Conference on Analytical Chemistry and Spectroscopy Pittcon'2001 Conference (New Orleans, USA, March 4–9, 2001).

Sholupov S. E., Pogarev S. E., Ryzhov V. V., Christensen I. The determination of ultra-trace (PPT) mercury content by the CV AAS without preconcentration // Proc. 6th International Conference "Mercury as a Global Pollutant" (Minamata, Japan, October 15–19, 2001). – P. 84.

Sholupov S. E., Popov A. P., Ryzhov V. V., Pogarev S. E., Markelov M., Siperstein J. New real-time Zeeman atomic absorption continuous mercury (HG) emission monitor // Proc. 6th International Conference "Mercury as a Global Pollutant" (Minamata, Japan, October 15–19, 2001). – P. 83.

Sholupov S. E., Ryzhov V., Popov A., Siperstein J. New real-time Zeeman atomic absorption continuous mercury emission monitor // Proc. International Conference on Emission Monitoring (Arnhem, The Netherlands, 25–27 April, 2001).

2002

Pogarev S. E., Ryzhov V., Mashyanov N., Sholupov S., Zharskaya V. Direct measurement of the mercury content of exhaled air: a new approach for determination of the mercury dose received // Analytical and Bioanalytical Chemistry. – 2002. – V. 374. – No. 6. – P. 1039–1044.

Altman E. L., Panichev N. A. Gold in the atmospheric air as an indicator of deep gold deposit // Proc. South African Chemical Conference SACI 2002 (Port Elisabeth, SAR, July 1–5, 2002). – P. 45–47.

Higuera P., Segador M. M., Ryzhov V., Mashyanov N., Benitez A. Mercury vapour content in the air at the Almadén mercury mining district, Spain // Proc. 18th General Meeting of the International Mineralogical Association (Edinburgh, Scotland, September 1–6, 2002).

Mashyanov N. Are the regular variations of mercury in hydrocarbon gas a possible predictor of earthquakes? // Atomic seminar at Department of Physics, University of California (Berkeley, USA, March 28, 2002).

Mashyanov N. R. Mercury in the environment. Problems of mercury pollution control // Workshop on Environmental Monitoring at the University of Kuopio (Kuopio, Finland, October 18, 2002).

Pogarev S., Ryzhov V., Mashyanov N., Sholupov S. Direct and high selectively measurement of mercury concentration in the exhaled air – the only reliable method for determination of Hg vapor exposure // Proc. Air Quality III – International Conference on Mercury, Trace Elements, and Particulate Matter (Arlington, VA, September 9–12, 2002). – P. 343.

Pogarev S., Ryzhov V., Sholupov S., Mashyanov N., Zharskaya V. New rapid method for determination of mercury dose by measuring Hg concentration in the exhaled air // Proc. 18th Nordic Conference on the Measurement of Elements and their Compounds (NASTEC) (Naantali, Finland, August 18–21, 2002). – P. 52.

Ryzhov V. V., Sholupov S. E., Mashyanov N. R., Markelov M., Siperstein J. Calibration of mercury analyzers and dynamic vapor generators // Proc. Pittsburg Conference on Analytical Chemistry and Spectroscopy Pittcon'2002 Conference (New Orleans, USA, March 18–22, 2002). – P. 150.

Ryzhov V., Sholupov S., Pogarev S., Christensen I. Direct AA mercury determination in samples with complex matrix // Proc. 18th Nordic Conference on the Measurement of Elements and their Compounds (NASTEC) (Naantali, Finland, August 18– 21, 2002). – P. 35.

Sholupov S. E., Ganeev A. A. Pogarev S. E., Ryzhov V. V. Christensen I. Determination of ultra-trace (ppt) mercury content in water without preconcentration // Proc. Pittsburg Conference on Analytical Chemistry and Spectroscopy Pittcon'2002 Conference (New Orleans, USA, March 18–22, 2002). – P. 144.

Sholupov S.E., Markelov M., Siperstein J. Effect of external conditions (air temperature and pressure) on the determination of mercury in atmosphere // Proc. Pittsburg Conference on Analytical Chemistry and Spectroscopy Pittcon'2002 Conference (New Orleans, USA, March 18–22, 2002). – P. 717.

Sholupov S., Pogarev S., Ryzhov V. Modification of Method 6009 NIOSH on determination of average mercury concentration in the air // Proc. Air Quality III – International Conference on Mercury, Trace Elements, and Particulate Matter (Arlington, VA, September 9–12, 2002). – P. 355.

Sholupov S., Pogarev S., Ryzhov V., Ganeev A., Mashyanov N., Stroganov A. New mobile Zeeman mercury spectrometer – an air real time mercury tracer // Proc. Air Quality III – International Conference on Mercury, Trace Elements, and Particulate Matter (Arlington, VA, September 9–12, 2002). – P. 356.

Sholupov S., Pogarev S., Ryzhov V., Mashyanov N., Stroganov A. New portable Zeeman atomic absorption mercury spectrometer // Proc. 18th Nordic Conference on the Measurement of Elements and their Compounds (NASTEC) (Naantali, Finland, August 18–21, 2002). – P. 59.

Sholupov S. E., Pogarev S. E., Ryzhov V. V., Mashyanov N. R., Stroganov A. A., Higuera P., Spiric Z. RA-915 – new mobile Zeeman mercury tracer // Proc. International Workshop on Health and Environmental Effects of Mercury in Africa (Dar Es Salaam, Tanzania, November 19–22, 2002).

Stroganov A., Sholupov S., Pogarev S., Ryzhov V., Mashyanov N. Enhancement of efficiency of mercury remediation by application of a real time mercury spectrometer RA-915+ // Proc. Air Quality III – International Conference on Mercury, Trace Elements, and Particulate Matter (Arlington, VA, September 9–12, 2002). – P. 352.

2003

D'Alquino R. Putting mercury-monitoring technologies to the test // SEP. – 2003. – October. – P. 6.

Ryzhov V. V., Mashyanov N. R., Ozerova N. A., Pogarev S. E. Regular variations of the mercury concentration in natural gas // Science of the Total Environment. – 2003. – V. 304. – No. 1–3. – P. 145–152.

2004

Kinsey J. S., Anscombe F. R., Lindberg S. E., Southworth G. R. Characterization of the fugitive mercury emissions at a chlor-alkali plant: overall study design // Atmospheric Environment. – 2004. – V. 38. – № 2. – P. 633–641.



Southworth G. R., Lindberg S. E., Zhang H., Anscombe F. R. Fugitive mercury emissions from a chlor-alkali factory: sources and fluxes to the atmosphere // Atmospheric Environment. – 2004. – V. 38. – № 4. – P. 597–611.