REGISTRATION SYSTEM ON LINEAR CCD FOR EMISSION ANALYTICS

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Key words: linear CCD, emission spectrometer, spectroscopy, spectra

1. We report about our developments of photoelectric cassette (PEC) on linear CCD which can be used with different exiting spectra sources (arc, spark, ICP, plasmatron), and most types of special spectrographs for emission spectrometers (DFS-8, DFS-13, DFS-452, DFS-458, ISP-22, ISP-28, ISP-30, PGS-2, STE-1, MFS-8).

2. PEC on linear CCD is convenient to use for registration of complex spectra containing analytical lines of 40-70 chemical elements with spectra interference.

3. Thousands emission spectrometers with photo registration is still used in Russia and other republic of USSR in different areas of expertise (geology, metallurgy, criminology). A visual stiloscope is also widely used in Russia for qualitative analysis. It is rational to replace them by registration system on linear CCD for automatization of spectra analysis.

4. We elaborated various types of PEC with different number of CCD (1-9), without (or with) a “dead” zones. Typical parameters of CCD used in PEC: the number of elements – 3648, dimensions of one element - 8x200 μm, spectral range – 180-1000 nm, dynamic range – 1300.

5. Special computer program for qualitative and quantitative emission analysis containing base on emission lines of 80 elements (for arc and ICP) is developed. It is based of spectra of such elements as Fe, Ni, Cu, Ti (for different sign of spectrograph’s dispersion (2,3,4, 6,7,3 Å/mm). There are some necessary resources – correction of spectral scale with temperature shift, registration of spectra in consecutive time intervals. We elaborated also analytic methods with assortment of analytical pairs and measuring time 0.2–60 s. A change of the method can be made operatively.

6. Examples of developed PEC employment are given in the report.

7. Method of analysis P in steel on serial emission spectrometer (generator IVS -28, spectrograph ISP-30) with developed PEC on 5 CCD is described in more detail.

Resume. PEC on linear CCD adjunct to serial emission spectrometer is effective and not expensive alternative of modem emission spectrometers.

MAGNESIUM FRACTIONATION STUDIES IN OLIVE OIL BY ICP-OES

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Keywords: Magnesium, olive oil, bioavailability, extraction