Scientific head of the laboratory

Leonid Sukhodub

head of the department of biophysics, biochemistry, pharmacology and biomolecular engineering, corresponding member of NAS of Ukraine, doctor of physics and mathematics, professor

Main trends of scientific activity of the laboratory are to study following matters: the biomineralization of calcium phosphate materials, mechanisms of regulation of crystallization processes, as well as the factors, responsible for the formation of pathological calcium phosphate deposits.

Address: 2 Rimskogo-Korsakova St.
Email: l_sukhodub@yahoo.com
Phones: 0542-68-78-72
0542-68-77-34
050-307-78-59

Synthesis Section

Laboratory equipment includes:

1. X-ray fluorescence spectrometer **Elvax Light SDD**.
2. Liquid chromatograph **Agilent 1200**.
3. X-ray diffractometer **DRON-3.**
4. Freeze dryer **Alpha 1-2 LDplus**.
5. Steam sterilizer **YXQ-LS-8SI**.
6. Muffle furnace **СНО 1,6.2,5.1/11И2**.
7. Shaker **KS 4000 I control**.

X-ray Fluoresce Analysis using ElvaX Light SDD

The spectrometer is designed for the rapid qualitative and quantitative analysis of metal alloys, powders, liquids and biosamples for the composition of chemical elements from Na (atomic number Z=11) to U (Z=92) in a wide range of concentrations. The measurement accuracy of the mass fractions of metals is not worse than 0.1%. The detection limits of heavy metal impurities in light matrix is better than 1 ppm.

The spectrometer is included in the State Register of measurement equipment, which is allowed to be used in Ukraine, under the ID – U1411-01.

High Performance Liquid Chromatography using Agilent 1200

Problems, solved by Agilent 1200:

- quantitative determination of preservatives, oxidants, emulsifiers, dyes and reagents, which are sweetening food products (benzoic, sorbic acids, etc.);
- Measurement of aflatoxins in grain, nuts, and spices
- determination of mycotoxins in cereals (B_1, B_2, M_1, G_1, G_2);
- determination of residuals of antibacterial and medicine agents in animal tissues, milk and eggs;
- definition of drugs and alkaloids (morphine, caffeine, tannin, etc.);
- determination of steroids and hormones;
- analysis of organic polymers, optical isomers, the active component of antibiotics, fat and water soluble vitamins, proteins, petew and catecholamines.

X-ray Diffraction Analysis using DRON-3

Problems, solved by DRON-3:

- qualitative and quantitative phase analysis;
- determination of lattice parameters of crystalline substances and crystallite sizes;
- microstrain studies of substances;
- analysis of texture;
- determination of the degree of crystallinity of a sample.

Scientific and production laboratory

«Bionanocomposite»

Sumy State University

2017