**STATE-OF-THE-ART AND FUTURE PROSPECTS OF NEUTRON ACTIVATION ANALYSIS AT THE REACTOR IBR-2 OF THE JOINT INSTITUTE FOR NUCLEAR RESEARCH IN DUBNA, RUSSIA**

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The history of development of neutron activation analysis in the FLNP JINR is briefly outlined. Modernization of the pneumatic system, equipped with three automatic sample changers and recent upgrades of NAA DATABASE created to automate the measurement and processing of gamma spectra of induced activity are described. Experience in the Life Sciences and Materials Science is summarized. Examples are given of projects related to monitoring of atmospheric deposition of heavy metals, nitrogen, POPs, radionuclides and cosmic dust carried out in the framework of the United Nations Program on Long-Range Transboundary Air Pollution in Europe (UNECE ICP Vegetation).Information is reportedontemporal trends of pollution in the Russian coastal area of the Black sea by nuclear and related analytical techniques obtained in a collaborative project with the Moscow State University in the framework of IAEA Regional IAEA Technical Cooperation and IAEA Coordinated Research Programs. The results on assessment of the state of the environment in the basin of the river Nile in Egypt and project on monitoring trace elements in aquatic ecosystem in the Western Cape, South Africa («Mussel Watch Program») are shown. Examples of using NAA in combination with microscopy for tracing biotechnological process of synthesis of nanoparticles of various metals are demonstrated. Study of natural medicinal plants and search for cosmic dust in natural planchettes (Arctic and Antarctic mosses, Siberian peat bog cores, *etc*.) are described. Educational aspect of training undergraduate and graduate students from JINR member-states is enlightened. Future prospects of applying NAA at the reactor IBR-2 in biological investigations and developing radioecologicalstudies in the Sector of NAA and Applied Research are discussed.