

## Nanobiotechnology and chemical technology

### Ashes and slag waste as secondary raw materials in producing nanomaterials

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Among CIS countries Ukraine is one of the biggest producers of electrical energy and metallurgical products. Nowadays thermal power stations working on organic fuel and supplying 70-80% of total electricity production are the basis of Ukrainian power industry. In metallurgical industry a considerable part of wastes falls at production of iron oxide concentrate. During the process of coal combustion for producing thermal and electrical power at thermal power plants (TPP) as well as of ore concentration a great amount of ashes and slag waste is formed. The volume of the above waste application in our country does not exceed 10% [1].

Diversity of methods for using both pure ashes and slag waste and valuable compounds contained in it allows to expect further promising extraction, by fractions of unburnt coal, ore concentrate of iron oxide, aluminosilicate microspheres and new elements in separated or concentrated form.

Development of technological solutions will permit to obtain preparation concentrate of iron oxide (the latter constituting 70-80%) and concentrate of rare-earth elements with much stronger concentration of the latter as compared to common ore. This will give rise to use of the materials involved in production of nanomaterials [2], coagulants and as a basis for synthesizing iron-containing and rare-earth compounds of various practical application.

1. Hlopitskiy A. A. Status, problems and prospects of processing of ash and slag waste of thermal power plants of Ukraine // Scientific Journal "ScienceRise".-2014.-Vol.4/2(4).-P. 23-28.

2. Hlopitskiy A.A. Study of Complex Recovery of Solid Slag Waste from Thermal Power Plants in Target Components // Chemical and Materials Engineering, 2015.-Vol.3(1).-P. 1-5.